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ANNALS

OF THE

ASTROPHYSICAL OBSERVATORY

OF THE

SMITHSONIAN INSTITUTION

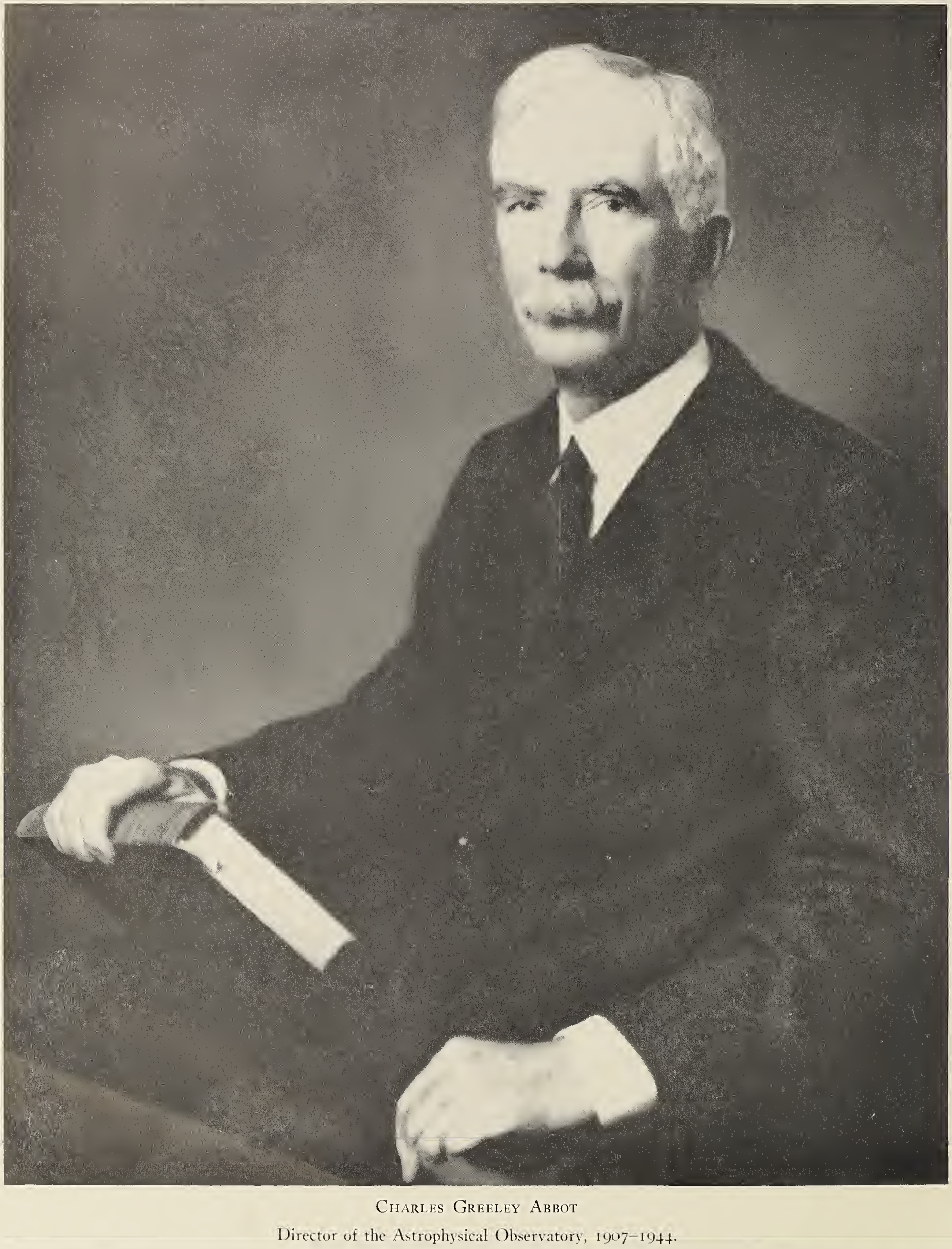
VOLUME 7

By

L. B. ALDRICH, Director, and W. H. HOOVER, Chief, Division of Astrophysical Research

(PUBLICATION No. 4138)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
1954



Charles Greeley Abbot

Director of the Astrophysical Observatory, 1907–1944.
Secretary of the Smithsonian Institution, 1928–1944.

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Preface

For nearly 50 years Dr. Charles Greeley Abbot directed the work of the Astrophysical Observatory, as Aide Acting in Charge beginning in 1896 and as Director subsequent to 1906. He retired from administrative duties on July 1, 1944. Those who were privileged to work under Dr. Abbot realize how great has been his contribution to the progress of the Observatory. Much to the satisfaction of the staff, Dr. Abbot is still affiliated with the Smithsonian Institution as research associate. His continued investigations, chiefly concerned with periodicities in solar activity and their correlation with weather elements, are published in the Smithsonian Miscellaneous Collections. His papers are listed by titles in Appendix 2 of this volume.

Many individuals have given important aid in the work here presented. Chief among them are the following:

Alfred F. Moore, who retired in 1948 after 31 years of field service which carried him to out-of-the-way places on nearly every continent. His record shows painstaking care and constant devotion to the best interests of our work.

Frederick A. Greeley, now in charge of the Montezuma, Chile, station, who has efficiently served the Smithsonian Institution in isolated desert regions for 33 years.

Andrew Kramer, Observatory instrument maker for 61 years, now in his 85th year and still turning out parts for our special instruments.

Gladys T. Bond, statistical assistant for 30 years, whose analytical mind aided greatly in our search for errors in solar computations. Her untimely death in December 1951 is sincerely mourned by her associates.

Lena S. Hill, computer for many years, who deserves much credit for carrying on Mrs. Bond's difficult task.

M. Agnes Neill, who retired voluntarily in 1951. As secretary to the Director for 25 years, Miss Neill contributed much to the smooth operation of the Observatory.

Elsie Swindlehurst, Miss Neill's successor, whose rapid and accurate typing and careful checking of tables are highly appreciated.

Acknowledgment is made of the excellent work performed under the sponsorship of the Astrophysical Observatory by Mr. R. J. List as editor of the sixth revised edition of the Smithsonian Meteorological Tables (1951) and by Dr. William E. Forsythe who prepared the manuscript of the ninth revised edition of the Smithsonian Physical Tables, now in press.

A great friend of the Observatory, Mr. John A. Roebling, passed away in February 1952. Mr. Roebling's generosity, expressed in numerous financial grants, made possible the establishment of our high-altitude field stations and aided materially in the development of the solar-constant program.

With deepest sorrow we record the sudden death on September 11, 1953, of William H. Hoover, co-author of this volume. Mr. Hoover's outstanding work and sterling character make his passing a severe loss to the Astrophysical Observatory.

Andrew Kramer retired from active duty on June 30, 1953.

DECEMBER 22, 1953. L. B. A.

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Introduction

This is the seventh volume of the Annals of the Astrophysical Observatory of the Smithsonian Institution. Volume 1, presenting the splendid work of Langley and Abbot in mapping the infrared spectrum of the sun, appeared in 1900. Volume 2, which describes early efforts to measure the intensity of solar radiation outside the earth's atmosphere and the first high altitude observations obtained at Mount Wilson, Calif., appeared in 1908. Volume 3, issued in 1913, describes the intensification of the solar-constant work, evidences of solar variability from observations in North Africa and on Mount Whitney, and the establishment of the Smithsonian standard scale of solar radiation, called the Smithsonian Scale of 1913. Volume 4 (1922) summarizes instrumental improvements, the successful measurement of solar radiation by a recording pyrheliometer attached to a sounding balloon at 25,000 ft. altitude, and the establishment of continuously operating high-altitude observing stations at Montezuma, Chile (altitude 9,000 ft.), and on Mount Harqua Hala, Ariz. (altitude 5,800 ft.). Volume 5 (1932) describes the transfer of the Arizona station to a higher and more accessible location at Table Mountain, Calif., the establishment of a third station on Mount Brukkaros, South-West Africa, and the development of a short method of obtaining satisfactory solar constants. Volume 6 (1942) presents a complete recalculation of all solar constants since 1920 (occasioned by the discovery of an error in the original short method) and a complete summary of the observational and computing details up to October 1939. Volume 7, herewith presented, carries the observations and results to the end of 1952.

In 1890 Dr. Samuel P. Langley, then Secretary of the Smithsonian Institution, founded the Astrophysical Observatory, and he remained its director until his death in 1906. Dr. Langley's remarkable creative ability laid the foundation for a long-range program of solar research to determine the solar constant and its day-to-day variability, a program which has been an important work of the Observatory ever since. Dr. Langley invented the bolometer, devised means for automatically recording the spectral distribution of solar energy, and developed a workable method to correct for energy losses in the atmosphere due to absorption, reflection, and scattering. He was not unmindful of the difficulties inherent in the project, for he regarded the accurate measurement of direct solar radiation as "formidable," and the correction of spectral measurements for atmospheric losses as "perhaps insuperable." Those who have carried on Langley's program quite agree with his appraisal. The need for maximum care and accuracy in each observation is constantly in our minds.

During the directorship of Dr. Abbot (1906–44) new and important instruments were developed. These included the standard water-flow pyrheliometer, the silver-disk secondary pyrheliometer, the pyranometer, and the melikeron. The short method of determining solar constants was devised, tested, and applied. High-altitude field stations in most favorable desert regions were established. It was Dr. Abbot's hope to maintain at least three continuously operating high-altitude field stations in widely scattered locations, thereby obtaining a more complete solar record and increasing the accuracy by yielding more values on the common days. Two of the stations established by Dr. Abbot (Montezuma, 9,000 ft. altitude, in the Atacama Desert of northern Chile, and Table Mountain, 7,500 ft. altitude, on the edge of the Mojave Desert in southern California) have been in continuous operation since 1925. The Montezuma station, which for uniformity and excellence of skies is the best location we have ever occupied, was established in 1920. The third station has had a more unfortunate history. It was first established, with financial aid from the National Geographic Society in 1926, on Mount Brukkaros, 5,000 ft. altitude, in South-West Africa. The skies here proved inferior because of high winds and dust and the station was abandoned in November 1931. After a careful survey by A. F. Moore of other locations in Africa, the third station was reestablished in December 1933 on Mount St. Katherine, 8,600 ft. altitude, in the Sinai Peninsula. This location proved to have excellent skies, on the average nearly equal to Montezuma. However its remoteness and isolation, plus the uncertainties due to approaching war clouds, made it advisable to close the station in December 1937.

The equipment was next set up on Burro Mountain, 8,000 ft. altitude, near Tyrone, N. Mex., in January 1939. The skies here were promising at the start but progressively deteriorated and the station was closed in February 1946. The equipment was temporarily transferred to Miami, Fla., to carry out certain sun and sky radiation measurements for the Quartermaster Corps, Department of the Army.

In 1947 and 1948 considerable effort was made to find that location in North America which would most nearly approach the excellence of Montezuma. Tests indicated the Clark Mountain region in California as the most promising. Lacking sufficient funds to reestablish a third station, we instead constructed on Table Mountain a second observing tunnel. This second tunnel is used for special research problems.

A third field station in a favorable locality would greatly strengthen the solar-constant record. Omitting all observations graded poor, the average number of days of solar-constant observations per year at the best field station, Montezuma, is 194. At Table Mountain it is 130. During the four years of observations at St. Katherine the average was 177. The average number of observation days per year with the two stations in operation (Montezuma and Table Mountain) is 246. With three stations (St. Katherine 1933–38, Tyrone 1939–46) the total per year averaged 296.

In May 1929, with financial aid from the Research Corporation of New York, Dr. Abbot established the Division of Radiation and Organisms as an independent bureau of the Smithsonian Institution to study the effects of radiation on living organisms. Laboratories were equipped in the west basement of the Smithsonian building, and offices were established in the tower of the same building. Dr. F. S. Brackett of the Department of Physics, University of California, was placed in charge. Given the difficult task of organizing, planning, and staffing the new department, Dr Brackett's good judgment and sound knowledge of essential needs bore excellent fruit in succeeding years. In 1933 Dr. Abbot assumed the directorship, with Dr. Earl S. Johnston as assistant director. Dr. Brackett continued temporarily as part-time consultant.

In July 1941 Congress authorized the inclusion of the Division of Radiation and Organisms in the Astrophysical Observatory and since then the Observatory has consisted of two divisions—the Division of Astrophysical Research, carrying on the original program of solar radiation research, and the Division of Radiation and Organisms for studies concerned with radiation bearing directly or indirectly upon biological problems.

Following Dr. Abbot's retirement from administrative duties, Dr. Earl S. Johnston was made chief of the new division. After several years of severe physical ailment, Dr. Johnston died in December 1947. During this period three of his staff transferred to defense agencies and the affairs of the division reached a low ebb. However, the Observatory was fortunate in securing Dr. R. B. Withrow to rebuild the division. On September 1, 1948, Dr. Withrow was installed as chief of the division and a complete reorganization and renovation of the laboratories and research program followed. The Research Corporation of New York again generously aided financially, and contracts for special researches were made with the Atomic Energy Commission and with the Biological Department, Chemical Corps, Camp Detrick, Md. Dr. Withrow's excellent background of experience in biophysics, plant physiology, and electronic methods at Purdue University, University of Chicago, and Argonne National Laboratory makes him ideally suited to direct the work of the division.

Since there is a definite dividing line between the research problems of the two branches of the Astrophysical Observatory, it is deemed advisable to limit these Annals of the Astrophysical Observatory to the work of the Division of Astrophysical Research.

Detailed reports of the work of the Division of Radiation and Organisms are found in individual papers by staff members published usually in the Smithsonian Miscellaneous Collections. A fairly complete list of these reports is given in Appendix 2. At present it is the policy of the division to publish its researches largely in various journals of biophysics and plant physiology.

Annals 1941–52

The following selections from the annual reports of the Director state the progress of the work from the date of publication of volume 6 of these Annals to include the year 1952.

Fiscal year 1941

Messrs. Aldrich and Hoover, with assistance of computers Mrs. A. M. Bond, Miss L. Simpson, and Miss N. M. McCandlish, prepared in manuscript the immense table of daily solar-constant observations from 1923 to 1939. The table contains all individual observations in detail for the three stations, Montezuma, Table Mountain, and Mount St. Katherine. A single day sometimes involves in itself alone a subtable of 10 lines, 10 columns wide. Every solar-constant determination was scrutinized in detail from the original records before entry into the great table, and in very many instances recomputed to check discordant results. Mean values giving the most probable result of each day at each station were computed, and all were plotted on an extended scale. This plot made up a roll about 15 inches wide and 200 feet long.

In this form every day's values were scrutinized by C. G. Abbot, and discordances noted. As one result of his work in preparation of a paper entitled "An Important Weather Element Hitherto Generally Disregarded,"[1] Dr. Abbot had been strongly impressed by the fact that the solar variation is several times greater in percentage for blue-violet rays than for total radiation. This led him to investigate whether on discordant days the shorter wavelength parts of the energy spectrum of the sun, as computed for outside our atmosphere, were also discordant. It was proved that in many cases they were not, showing that errors had been made in other than the spectral parts of the determinations. Hence, the entire great table was gone through, and for all discordant days the blue-violet extra-atmospheric spectrum was reduced to comparable units by bringing all days to equality in the infrared region, where solar variation is nearly nil. Nearly a hundred pages of newly computed manuscript tables were required to set forth this information.

With this new information available, Dr. Abbot in many cases marked "improved preferred" daily values on the great chart for one or more of the stations, as dictated by the blue-violet spectrum. He then took the general mean for each day, not only of the untreated results, taking into account only the grades assigned by Messrs. Aldrich and Hoover for the separate stations, but also an "improved preferred" mean for perhaps one-fourth of all the days. These new means were the results preferred after considering the blue-violet spectrum. Both of these daily means were entered in the great table so that when it is published readers may use either the preferred general mean or the "improved preferred" general mean, as they please.

As the great table was thus being finished in manuscript, it was being typewritten by Miss M. A. Neill in preparation for the printer. By the end of the fiscal year it was almost finished for publication. In the meantime the rest of the manuscript for volume 6 of the Annals had been finished as far as possible by Dr. Abbot and typed by Miss Neill. But some changes and additions will be made after the inspection of the great table is completed. There appears every reason to hope that the entire manuscript of volume 6, including the great table and its subsidiaries and tables of 10-day and monthly means, will be in the printer's hands before New Year's Day.

The study of the great table led Dr. Abbot to reconsider whether the sun's variation might not be followed more effectively by observations limited to the blue-violet region of the spectrum. He was at length able to devise a method which appears promising, and which has been introduced just at the end of the fiscal year at all three field stations. In brief, the method contemplates inserting in front of the spectrobolometer slit a glass filter which restricts the radiation to the desired blue-violet region. An exactly similar glass filter is inserted before the aperture of the pyrheliometer. Knowing from the usual solar-constant work of the day the atmospheric transmission coefficients for blue-violet rays, it is possible to compute the extra-atmospheric energy spectrum of the restricted blue-violet spectrum given by the screened spectrobolometer. A comparison of the blue-violet energy spectra at the station and as computed for outside the atmosphere gives a factor to multiply the screened pyrheliometer reading to what it would be outside the atmosphere.

In this way we restrict the observations to the most variable part of the observed solar spectrum, and avoid those spectral regions where ozone, water vapor, and extreme short and long wavelengths introduce great errors. We greatly hope that this new method will yield more reliable daily indications of the solar variation.

The necessary instrumental changes for introducing the new method were done by A. Kramer. He has also prepared special apparatus for solar distillation of sea water after Dr. Abbot's design and many other required small jobs for the Observatory.

Dr. H. Arctowski continued his meteorological investigations relating to the effects of solar variation on atmospheric barometric pressure and temperature. His studies led to researches on the upper air. By courtesy of the Chief of the U. S. Weather Bureau a long series of daily nocturnal radio-meteorograph records was procured. Dr. Arctowski made very extensive computations and graphical representations with these data. At the end of about 18 months of strenuous investigation he prepared a paper illustrated by many plots and much tabular matter which will be found of source value hereafter. This paper will soon issue under a Roebling grant. Dr. Arctowski finds the important influence of solar variation on weather plainly obvious but the manner of its operation extremely complex. He regards this first paper as merely introductory and sees a great field for future investigation.

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[1] Smithsonian Misc. Coll., vol. 101, No. 1, 1941.

As far as possible daily determinations of the solar constant of radiation were made at three field stations, Montezuma, Chile, Table Mountain, Calif., and Tyrone, N. Mex. A commodious, reinforced-concrete dwelling was erected at Montezuma under H. B. Freeman's direction.

Fiscal year 1942

The outstanding event was the completion and publication of volume 6 of the Annals of the Observatory. The volume begins with extracts from the reports continuing the annals of the Observatory operations from 1931 to 1940. Next, the principal research on the variation of the sun's radiation is minutely described, with illustrative graphical and tabular matter relating to every feature. Then follow 78 quarto tabular pages giving in detail daily results of observation of the solar constant of radiation (i.e., the intensity of the sun's rays as they exist at mean solar distance outside the earth's atmosphere). This table covers all observations over the interval from 1923 to 1939 at Montezuma, Chile, Table Mountain, Calif., and Mount St. Katherine, Egypt. The results are given in 12 columns for each day, covering not only the final results at each station, but the more important observations leading up to them. For some individual dates as many as 12 lines are required. Each page of the Annals includes 3 such groups of columns or 36 in all, and each page has approximately 80 lines. The enormous task of preparing this table has been mentioned repeatedly in preceding reports.

Then follows a chapter on the derived results and conclusions based on this great tabular compilation, including related additional information for the years 1920 to 1923 derived from volume 5 of the Annals.

As regards accuracy, the probable accidental error of a single day's determination of the solar constant from observations at the stations is one-sixth of 1 percent, and for 10-day and monthly means it is one-ninth and one-twentieth of 1 percent respectively.

The variation of the sun, as our life-supporting star, is clearly indicated and, between extremes, ranges up to about 3 percent for the interval 1920 to 1939. It is verified not only by comparisons of our own radiation observations at widely separated stations but by comparison of them with the publications of visual and photographic studies of the sun's surface made at other observatories. Such comparisons show, for instance, that the rotation of the sun upon its axis in the approximate period of 27 days frequently is attended by 1 percent change in solar radiation associated with well-marked changes in the visual and photographic appearance of the sun.

The variation of the sun is shown not to be of uniform percentage for all colors and wavelengths, but to increase rapidly in percentage toward the shorter wavelengths of the violet and ultraviolet rays. For ultraviolet rays of wavelength 3500 angstroms, the percentage variation is six times as great as for the solar radiation as a whole.

Fourteen simultaneously operative regular periodicities are found in solar radiation ranging from 8 months to 273 months in periods. Each of these is reflected in temperatures and precipitations recorded by meteorological observations of official weather services. Long records extending for 140 years, like those of Copenhagen, Vienna, and New Haven, prove that the 14 solar periodic variations have continued in unchanged phases, though perhaps not in unchanged amplitudes, during all that interval. Assuming that the phases will continue unchanged, and the amplitudes will be the average of amplitudes since 1920, a prediction of the solar variation to 1945 is hazarded.

The publication of volume 6 of the Annals in such beautiful form and at so early a date was made possible by funds generously supplied by Mr. John A. Roebling. Without his long-continued and munificent support and advice the research could not have reached this satisfactory fruition. It is greatly hoped that it will furnish valuable aids to the science of meteorology.

A second outstanding event of the year is the acceptance by the Bureau of the Budget and the Congress of the proposal, strongly recommended by the Regents of the Institution, that the Division of Radiation and Organisms, hitherto for 13 years supported by private funds and hitherto concerned with the fundamental study of plant growth, be incorporated as a branch of the Astrophysical Observatory. Since the beginning of the fiscal year 1942 this interesting fundamental research has been supported by Congressional appropriations and its staff has been a part of the Government Civil Service.

Our detailed studies of the observations of the solar radiation disclosed, as above said, that the percentage variation of the intensity of the sun's rays is six times as great for ultraviolet rays as for the total of all wavelengths. It also appeared plainly that the chief source of error remaining in the determinations arises from uncertainty of the exact effect of absorption in the great infrared water-vapor bands, occurring in a spectral region where solar variation is almost nil.

These considerations led the Director to devise a method whereby, with a few additional observations using special glass, absorbing screens, determinations of solar variation could be restricted to the spectral region of the green, blue, violet, and ultraviolet rays. Apparatus for such determinations was prepared at our Washington instrument shop and has been installed at all three of the field stations. It has been in regular use at all of them since about July 1941 in addition to the ordinary observing.

It also appeared that certain types of sky conditions tended to produce unsatisfactory results by our present usual methods of observing the solar constant of radiation. It seemed possible that if in addition to our usual measurements we should observe the degree of polarization prevailing in sky light a correction of value might be discovered and applied in our daily measurements. Accordingly three copies of a sky polarization device invented by the late Prof. E. C. Pickering have been prepared at our Washington instrument shop. One is already installed at Montezuma, Chile, and has been used regularly since March 1942. Such instruments will soon be in use at our other stations.

Considerable special confidential work for military purposes has been done at our Washington instrument shop under the care of the Director.

The Assistant Director, Mr. L. B. Aldrich, has devoted a good deal of time as a member of the Smithsonian War Committee.

Three solar radiation observing stations have been operated on all favorable days at Table Mountain, Calif., Burro Mountain, N. Mex. (called the Tyrone station), and at Montezuma, Chile. The meteorological conditions have been rather less favorable than usual at all three stations, but still solar-constant observations were made on a majority of days at all stations.

New, reinforced-concrete living quarters for the director's family at Montezuma were completed under field director Freeman's direction and finished shortly before he was relieved by A. F. Moore in July 1941, and in May 1942 the assistant's quarters were rebuilt to a considerable extent.

Improvements were also made at Table Mountain and Tyrone stations. A new water supply system was installed at the former, and the drainage of the observing tunnel was perfected at the latter.

A. Kramer, instrument maker, retired, was restored to the active Civil Service at Washington under war regulations on March 16, 1942. A. F. Moore relieved H. B. Freeman, resigned, at Montezuma as field director in July 1941, and F. A. Greeley relieved James H. Baden as bolometric assistant there in April 1942. W. H. Hoover continued as field director at Tyrone station, relieving A. F. Moore. Thomas Hassard served from October 6, 1941, to April 16, 1942, as bolometric assistant at Table Mountain, relieving F. A. Greeley. On Hassard's resignation to enter military service, he was followed by Kenneth G. Bower in May 1942. Miss N. M. McCandlish, special assistant to the Director, resigned March 1942.

The following members of the staff of the Division of Radiation and Organisms were transferred to the staff of the Astrophysical Observatory on July 1, 1941, under authorization of the Civil Service Commission: Robert M. Clagett, Leland B. Clark, Earl S. Johnston, Edward D. McAlister, and Robert L. Weintraub.

Fiscal year 1943

The study of the solar-constant values published in March 1942 as table 24, volume 6 of the Annals of the Observatory, confirmed the discovery that the variation of the sun's output, seemingly irregular, is really made up of numerous regular periodicities, all being closely aliquot parts of 273 months. By combining their influences a prediction was made of the march of solar variation from 1939 through the year 1945. This appears in figure 14 of volume 6 of the Annals.

In this way it was shown that the years 1940 to 1947 would probably be the most interesting and important years to study the sun's variation since the early twenties. As the Smithsonian Astrophysical Observatory is the only agency in the world which follows the variation of the sun's output of radiation, it therefore seemed of extreme importance to keep the record unbroken through these critical years. Hence, despite demands of the war manpower situation, every available means has been used to keep the three field observatories at Montezuma, Chile, Table Mountain, Calif., and Tyrone, N. Mex., in operation. Thus far these efforts have been successful, notwithstanding the loss of three experienced observers from a total field staff of six.

Considerable progress has been made at Washington in the study of short-interval changes of the solar radiation in their relation to weather. As first shown in Smithsonian publications Nos. 3392 and 3397 in the year 1936, the sun's short-interval variations, though averaging only 0.7 percent, are important elements, even governing elements, in weather. The weather effects of individual solar changes are found to last at least 2 weeks. These studies of the year 1936 have been repeated this year employing the improved and enlarged "solar constant" data published as table 24, volume 6 of our Annals. The new results are even more convincing than the provisional ones just referred to. They have been extended to deal with the weather of several cities in different parts of the world for both temperature and barometric pressure.

At Washington two computers have continued reductions of solar-constant observations, but they have not, of course, been able to keep up to date with the results because they were also called on frequently for work relating to war problems assigned by the Army and the Navy or requested by outside agencies engaged in war work. It is hoped that with the return to Washington of Mr. Hoover, who has been carrying on measures at Tyrone Observatory for 2 years, the solar-constant computations can be pushed along more rapidly so as to disclose the remarkable changes of solar radiation expected for the year 1940 onward.

Most of the time of Messrs. Abbot, Aldrich, and Kramer has been devoted to problems assigned by the war services on which no report can be made at this time.

Mr. and Mrs. A. F. Moore completed their term of service at Montezuma. Mr. F. A. Greeley succeeded Mr. Moore in June 1943 as field director there with Mrs. F. A. Greeley as his assistant. Mr. Stanley C. Warner continued as field director at Table Mountain with Mr. Kenneth G. Bower as assistant. Mr. W. H. Hoover acted as field director at Tyrone Observatory. Mr. Alfred G. Froiland, bolometric assistant there, was inducted into the army in June 1943, after which Mr. Hoover carried on alone. Mr. Moore will take over at Tyrone, and Mr. Hoover will return to Washington. No changes in personnel occurred at Washington.

Fiscal year 1944

No male assistants could be retained at the three solar-constant observing stations, Montezuma, Chile, Table Mountain, Calif., and Tyrone, N. Mex., on account of war conditions. In this situation the wives of the three field directors, Greeley, Warner, and Moore, have stepped into the breach and are assisting with observing and computing. It has therefore been possible to keep the three stations in operation in this exceptionally interesting period.

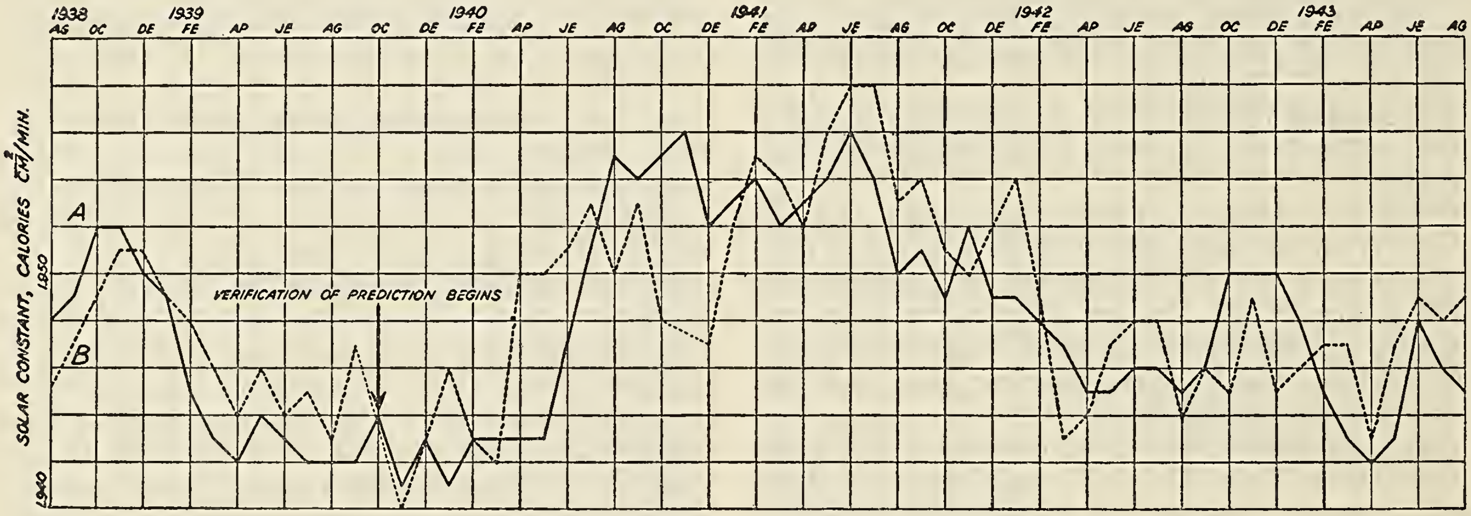

Figure 1.—The solar constant of radiation. A, predicted; B, observed.

As pointed out in last year's report, the predicted march of solar variation through 1945 indicates a large depression of solar radiation, beginning in October 1944, comparable to that which occurred 23 years earlier, beginning in 1921. Figure 1 shows that the observations made at Montezuma Observatory up to the middle of the year 1943 support thus far the trend of the prediction published in figure 14 of volume 6 of the Annals of the Astrophysical Observatory. It is therefore confidently expected that the depression of the solar constant will begin with October 1944. It is not yet possible to forecast what exact effects this depression (similar to that of 23 years ago) may produce in weather, but, as stated in an article a generation ago by Abbot,[2] unusual weather conditions may be anticipated.

Most of the time of Mr. Hoover, Mrs. Bond, and Miss Simpson at Washington and part of that of Mr. Aldrich has been occupied with the reduction and determining of the statistical corrections for the solar-constant work of the three observing stations since 1939. Additional types of observing, namely, polarization of the sky and energy spectrum observations limited to the ultraviolet region, have accumulated in these recent years. Their bearing on the determination of the solar variation is of great interest.

Mr. Aldrich has been occupied largely with special secret war problems, and part of Dr. Abbot's time has been spent thus also.

A major part of Dr. Abbot's work has consisted in the study of solar-constant variation and associated solar changes in connection with the weather. A paper entitled "Weather Predetermined by Solar Variation" has resulted, and appeared just at the close of the fiscal year. In the course of these studies it was found that variations of the areas of clouds of calcium vapor (calcium flocculi) as photographed at the Spanish Observatory of Ebro since 1910 were associated in the same way as solar-constant changes in predetermining the weather. This led to an attempt to weaken the light of the sun's disk by excessive spectral dispersion so far as to make visible variations of the bright lines of hydrogen or helium in the chromosphere. Doubtful evidences of such chromospheric lines were indeed recorded, but the photospheric spectrum was still too bright to disclose plainly the chromospheric lines or their variation even though the dispersion of the third order of a grating of 15,000 lines to the inch, a battery of prisms, and a path of 55 meters of travel of the spectrum rays were employed.

Fiscal year 1945

The Division of Astrophysical Research has its headquarters in Washington and maintains three field stations for solar observations, at Table Mountain, Calif., Tyrone, N. Mex., and Montezuma, Chile. In Washington the division occupies frame buildings in an enclosed area of about 15,000 square feet just south of the Smithsonian Building. The frame structures have served for many years as the offices and laboratories of the division. During the fiscal year 1945 extensive alterations and repairs were made which provide greatly improved facilities for the work of the division.

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[2] Proc. Nat. Acad. Sci., vol. 9, No. 6, pp. 194–198, June 1923.

In the first half of the fiscal year a large part of the time of Mrs. Bond, Mr. Hoover, and the Director was given to a compilation of all solar-constant values for the period October 1939 to January 1945. This compilation is an extension of the great table (table 24) of volume 6 of the Annals of the Astrophysical Observatory. The extended table summarizes the important factors employed in the reductions and also gives the preferred solar constant for each day of observation in the 21½-year period July 1923 to January 1945. Inasmuch as this period includes three sunspot minima (July 1923, September 1933, May 1944), and thus covers a complete double sunspot period, it became of interest to study all these results to determine what relationship exists between solar constants and sunspot numbers. A paper summarizing this study (Smithsonian Misc. Coll., vol. 104, No. 12) shows a diametrically opposite relationship between solar-constant values and sunspot numbers in the two halves of the double sunspot period. It is important to discover in the succeeding cycle of sunspots whether this complex relationship will repeat itself. If so, the prediction of solar variation as given in figure 14 of volume 6 of the Annals and referred to in the 1944 report will require some modification, since that curve did not include consideration of sunspot effects.

Dr. Abbot and Mr. Hoover constructed and tested a new sensitive radiometer which Dr. Abbot plans to use with the aid of the Mount Wilson 100-inch telescope to study the distribution of energy in the spectra of stars of various types. Definite progress was made in the design of the instrument and in the control of static charges which in the past have been most troublesome.

At the request of the U. S. Weather Bureau, two pyrheliometers belonging to the Bureau were repaired and recalibrated. Also a silver-disk pyrheliometer was built, calibrated, and sold at cost to the Bureau.

Dr. H. Arctowski has continued his studies of the effects of solar-radiation changes upon atmospheric circulation and related atmospheric problems. A paper summarizing this work is in preparation.

Observations at the three field stations were maintained in spite of the continued manpower shortage. Great credit is due the directors of the stations for carrying the heavy observing load under difficulties. Owing to the serious illness of Mr. Moore, director of the Tyrone station, that station was closed for 8 weeks in the spring of 1945.

Two sets of experiments were carried out at the request of the Military Planning Division, Office of the Quartermaster General, to determine the surface temperatures attained by various samples of military clothing under conditions similar to those of actual use in the field. For this purpose we employed a special thermo-electric device developed some years ago at the Observatory for the measurement of skin temperatures.

In June 1945 a contract was signed with the Office of the Quartermaster General, under the terms of which the Observatory is to make a detailed study of radiation received from sun and sky at Camp Lee, Va., in connection with a series of tests being made there. The preparation of instruments for this study was in progress at the close of the fiscal year.

On June 30, 1944, Dr. C. G. Abbot, for many years Director of the Astrophysical Observatory, retired from administrative work. L. B. Aldrich was appointed Acting Director, and on April 16, 1945, he succeeded to the post of Director. It is a pleasure to record that Dr. Abbot remains at the Observatory as research associate and that his advice and help continue to be available to the staff.

As of June 1, 1945, L. B. Clark, expert glass blower and technician of the Division of Radiation and Organisms, was placed in charge of the construction of instruments and equipment for both divisions of the Observatory.

Fiscal year 1946

In addition to the usual routine of correcting, recomputing, and verifying the solar observations as received from the three field stations (Montezuma, Chile; Table Mountain, Calif.; and Tyrone, N. Mex.), a tabulation was made, after critical study, summarizing the solar record for the calendar year 1945. These values add another year to the great table of volume 6 of the Annals referred to in last year's report. Progress has also been made in the continued search for possible improvements in solar-constant instrumentation and methods. A new vacuum bolometer, designed by L. B. Clark, technologist of the Observatory, is in preparation. This new design will eliminate the gradual loss of sensitivity which we have noted in the past arising from certain impurities in the vacuum chamber.

Reference was made in last year's report to a contract, signed in June 1945, with the Office of the Quartermaster General, Army Service Forces, under the terms of which the Observatory is to make a detailed study of sun and sky radiation at Camp Lee, Va., as part of extensive tests in progress there to determine the causes for the deterioration of tents and tent fabrics. It is known that radiation from the sun and sky falling upon exposed fabrics over extended periods is a factor which hastens deterioration in the fabrics. Practically nothing is known, however, of the amount of radiation required or of the part of the spectrum most active in degradation. The development of suitable instruments and methods for this radiation study at Camp Lee, the installation of the equipment, and the organization of the observing program occupied the time of most of the staff for several months. The type of instrument adopted is a special form of the sensitive, quick-acting thermoelement which Mr.

Clark has developed and used in many lines of research. Eight copies of this instrument, all automatically recording, were prepared under Mr. Clark's direction and are now in successful operation at Camp Lee. Special glass filters, hemispherical in shape, are used to restrict the instrument to the measurement of radiation in known parts of the spectrum. Description of these instruments is given in a report soon to be issued.

Dr. Abbot has continued his researches correlating solar activity with weather changes and has published two articles on the subject during the year.

Publication of Dr. Arctowski's studies of terrestrial and solar atmospheric circulation has been delayed. Dr. Arctowski has uncovered certain interesting phases of the subject which he feels require further study.

Notwithstanding the continued handicap of manpower shortage, observations were made on every available day at all three field stations until February 1946. At that time the Tyrone station was closed because of the resignation of S. C. Warner as director. Since the sky conditions at Tyrone have been progressively less favorable during the past 4 years, probably owing to increased smoke and dust from mining operations in the general vicinity, the closing of this station is not too greatly regretted. At the end of the fiscal year arrangements were nearly completed to install the Tyrone equipment temporarily at a wet, sea-level location in Florida where valuable observations can be made concerning the transmission of radiation through water vapor and related problems.

The program of observations of sun and sky radiation at Camp Lee, Va., begun in December 1945, is still in progress. The observations are made largely by personnel of the Quartermaster Board working under the direction of Mr. Hoover. This has necessitated frequent trips by Mr. Hoover to Camp Lee to install, supervise, and inspect the work. From these Camp Lee measurements a great volume of information is accumulating concerning the kind and amount of radiation for each hour of each day that falls upon the tents and exposed panels. These data will be summarized and published at intervals. The first report is expected to appear shortly. It is confidently hoped that these measurements will help to explain the causes of exposed fabric deterioration.

In August 1945 Dr. Abbot spent several weeks at Mount Wilson, Calif., testing his new radiometer and developing plans for improved apparatus for measuring the energy spectra of stars.

On March 9, 1946, the Observatory lost by death Lyman A. Fillmen, instrument maker for the past 15 years. His place was filled on April 8, 1946, by Darnel G. Talbert.

A. G. Froiland, on military furlough since July 8, 1943, returned as astrophysical aide November 16, 1945. In February 1946 he was promoted to associate astrophysicist and transferred to Montezuma, Chile, where he assumed charge of the Montezuma station, replacing F. A. Greeley. Mr. Greeley returned to Washington in May, and at the close of the fiscal year was enjoying a well-earned vacation. He and Mrs. Greeley had for 3 years carried on the arduous work of the Chilean station unaided.

In September 1945 A. F. Moore, director of the Tyrone station, exchanged stations with S. C. Warner, director of the Table Mountain station. In January 1946 Mr. Warner resigned to return to the teaching profession.

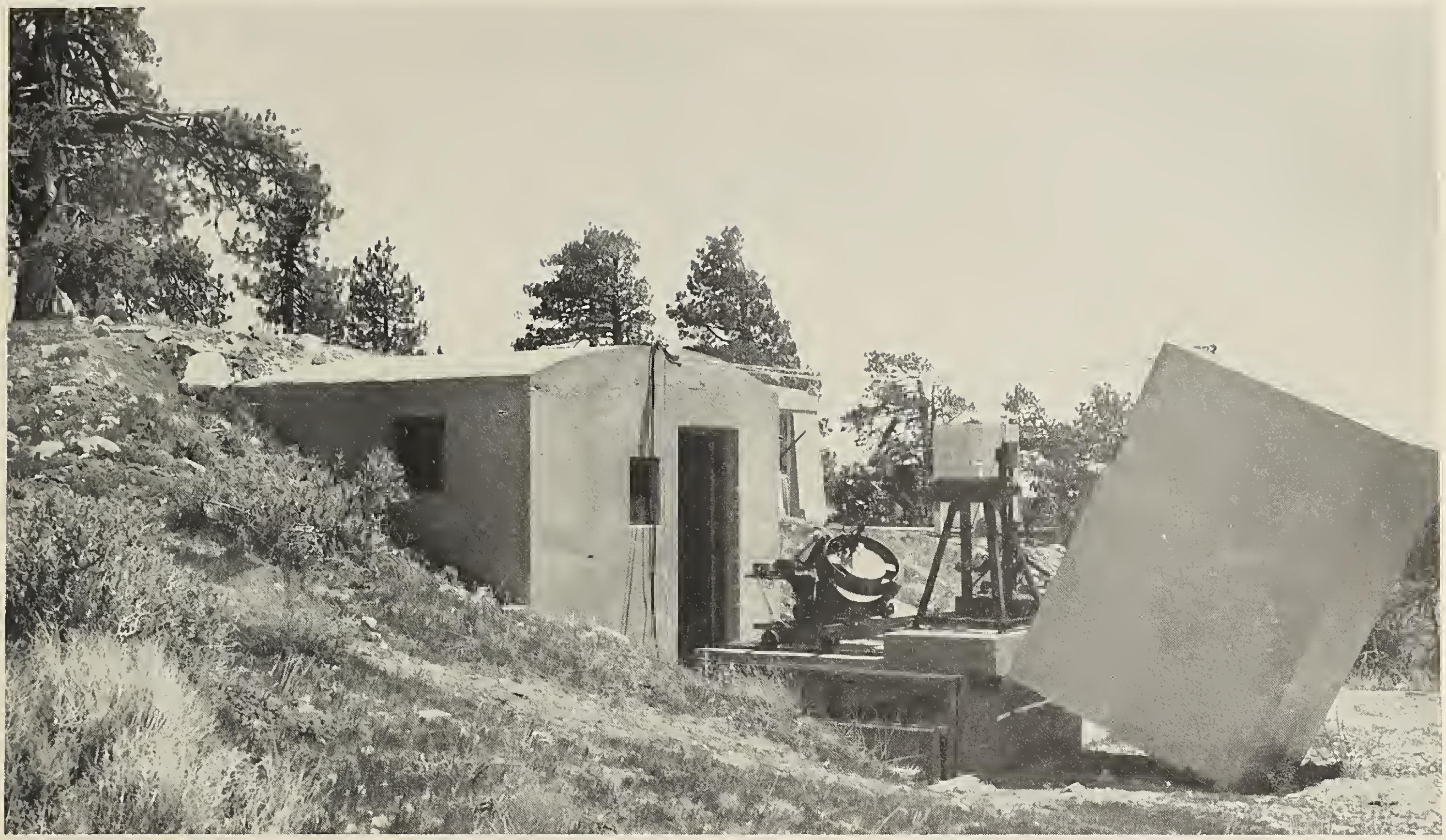
Fiscal year 1947

The two divisions of the Observatory helped to celebrate the one-hundredth anniversary of the founding of the Smithsonian Institution by participating in a special exhibit illustrating the activities of the Institution. Mechanical working models were displayed showing typical instruments as used by the Observatory at Camp Lee, Va., and also showing types of research in the Division of Radiation and Organisms, with emphasis placed on the role of light in the growth and development of plants.

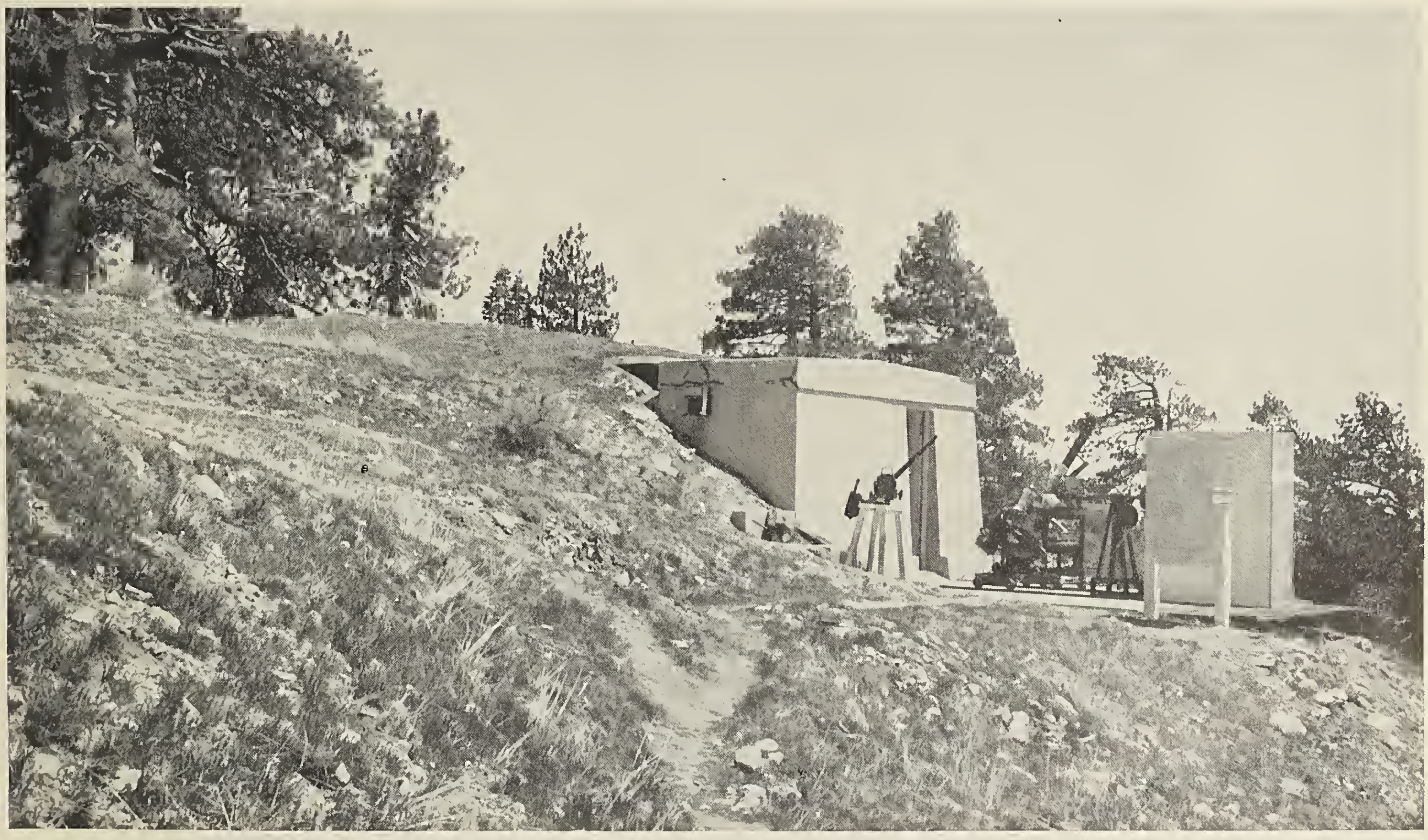
As in the past, our first concern has been to appraise the solar-constant values received from our field stations and to plan and develop improvements in instrumental equipment and methods. Our plans have seemed unduly slow in fulfillment, but by way of anticipation we may state that in the near future at one of our field stations we expect to try several innovations. These include an improved vacuum bolometer, a fused quartz prism, and aluminized mirrors in the optical path in place of stellite. The resulting large increase in ultraviolet deflection should permit a more accurate study of the day-to-day changes in this important region.

Our second concern has been the work at Camp Lee, Va., under contract with the Office of the Quartermaster General, described in last year's report. The records of the Camp Lee measurements of sun and sky radiation have been compiled and prepared for publication in a series of 11 reports to the Quartermaster General. The maintenance of the equipment and observations at Camp Lee and the preparation of the reports have all been under the direction of William H. Hoover. With the close of the fiscal year we have completed 18 months of continuous observations at Camp Lee. These records give the sun and sky radiation in calories per square centimeter for each hour of each day divided as follows:

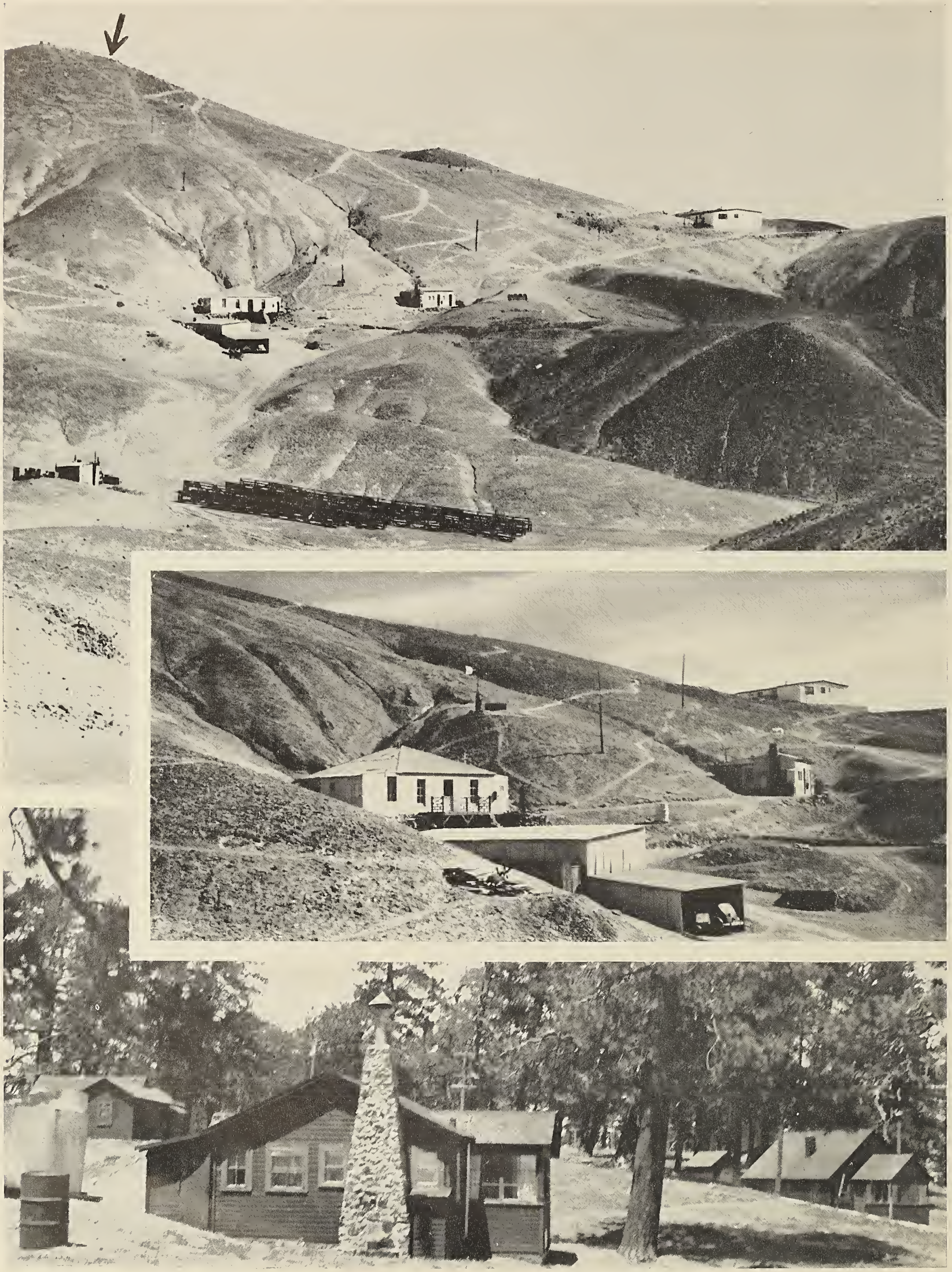
(1) Total intensity on a horizontal surface.
(2) Total intensity on a surface inclined 45° to the east.
(3) Ultraviolet intensity on a surface 45° to the east.
(4) Visible intensity 45° to the east.
(5) Infrared intensity 45° to the east.
(6) Intensity under a vycor filter which transmits all radiation, inclined 45° to the south.
(7) Intensity under a black filter (Corning 2540) which cuts off the ultraviolet and visible, and transmits the infrared, 45° to the south.
(8) Intensity under a yellow filter (Corning 3385) which cuts off the ultraviolet and transmits the visible and infrared, 45° to the south.
(9) Ultraviolet intensity on a horizontal surface measured with a special photoelectric ultraviolet meter.



New observing tunnel at Table Mountain, Calif. Part of original tunnel can be seen in background.



Original observing tunnel at Table Mountain.



Top: Montezuma, Chile. Arrow shows location of observing tunnel. *Inset:* Garage and shop in foreground; seismograph and computing room between the two dwellings. *Bottom:* Table Mountain, Calif. Shop and computing room on left, dwellings in foreground and at right.

The measurement and reduction of these voluminous records have been tedious and time-consuming. Integrating devices which will greatly simplify the work are being studied by Mr. Hoover and L. B. Clark, and several such devices are under construction in our shops.

It is now 13 years since Dr. C. G. Abbot and the Director last determined the standard scale of solar radiation on Mount Wilson. In anticipation of a new determination of this scale in the near future, the double-barreled water-flow pyrheliometer used successfully in 1934 has been partially rebuilt. Rubber joints within the instrument have been eliminated, copper-constantan thermojunctions replace the former nickel-platinum junctions, and the thermoelement arrangement is made more simple and efficient.

Dr. Abbot, research associate of the Observatory, has continued his studies of the effects of solar changes on weather. He has also experimented with a small solar engine, and has made preparations for a further study of the energy spectra of stars which he will undertake soon with the aid of the Mount Wilson 100-inch telescope.

At the request of Dr. Henryk Arctowski and with the cooperation of Dr. Abbot and the Secretary of the Institution, Dr. Alexander Wetmore, arrangements were made for John McLean Hildt to come to Washington to assist Dr. Arctowski for a year. Mr. Hildt, formerly meteorologist for the American Overseas Airlines, began work with Dr. Arctowski on June 2, 1947. He will help organize and prepare for publication the large amount of material which Dr. Arctowski has accumulated.

In October 1946 Mr. Hoover and Paul Greeley went to New Mexico and packed for shipment the entire equipment of our Tyrone station, closed since February 1946. Arrangements were made for the sale and disposal of the buildings and for the return of the site to the custody of the Forest Service. The equipment was sent to Miami, Fla., and stored pending the completion of a building suitable for temporary solar observations at this sea-level location.

In further development of their studies of the causes of tent deterioration, the Quartermaster Department decided to extend the Camp Lee work to include measurements and exposures at a wet, sea-level station and also at a dry, high-altitude station. Fortunately, in Miami, the General Motors Corp. maintains a test field for the exposure and testing of various materials. At the suggestion of Dr. S. J. Kennedy of the Military Planning Division, Office of the Quartermaster General, a cooperative program was arranged between the General Motors Corp., the Quartermaster Department, and the Smithsonian Institution. General Motors generously undertook to build a special observing shelter at their test field to house our spectrobolometric equipment formerly in operation at Tyrone, N. Mex. This building, a most satisfactory, well-insulated structure of cement brick, was completed in April 1947. F. A. Greeley, recently director at our Montezuma, Chile, station, took charge of the installation of our equipment on May 1. Spectrobolometric observations are planned for a 1-year period.

During the war years our field stations were unavoidably undermanned. It is therefore a satisfaction to state that each of the stations now has two competent observers, as in prewar days.

During the fiscal year, a generous gift to further the work of the Division was received from John A. Roebling. The staff of the Observatory is sincerely grateful to Mr. Roebling, and to Dr. Abbot through whose kindly interest the gift was received.

Fiscal year 1948

In September 1947 W. H. Hoover was promoted to be Chief of the Division of Astrophysical Research. Mr. Hoover has been a member of the Observatory staff since 1923. It is a sad duty to record the death on December 17, 1947, of Dr. Earl S. Johnston, Chief of the Division of Radiation and Organisms. Dr. Johnston joined the division at its beginning in 1929 and was responsible for a large portion of its development in recent years. Before the close of the fiscal year the Observatory was fortunate in completing arrangements to have Dr. Robert B. Withrow, of Purdue University, succeed Dr. Johnston as chief of the division beginning September 1, 1948. During the year Dr. R. L. Weintraub, biochemist, and L. B. Clark, expert glass blower and technologist, transferred to defense agencies.

The year may be characterized as one of exploration and development since considerable effort was expended in search for a suitable high-altitude site for a third solar station and in planning and preparing new equipment. It is proposed at the new station not only to conduct routine solar-constant observations but also to test new electronic equipment and to conduct special researches. One project planned is a day-to-day study of changes in the infrared band of ozone at 9 microns wavelength. For this work a special double spectroscope designed by Dr. Abbot, research associate, is being constructed by the Gaertner Scientific Corp. New mirrors, aluminized and coated with magnesium fluoride, for both coelostat and spectrobolometer are on order. A fused-quartz prism, free of bubbles, has been completed, as has a new vacuum bolometer. The bolometer, planned and built by L. B. Clark, is so designed that the vacuum around the bolometer strips will not deteriorate with time. Preliminary tests show it to be about three times as sensitive as the bolometers we are currently using.

The observations and computations from the Montezuma and Table Mountain field stations were carefully checked and appraised. Results for the calendar year 1947 were tabulated in the form given in table 24 of volume 6 of the Annals of the Astrophysical Observatory.

Arrangements were completed for the preparation of new and completely revised editions of the Smithsonian Meteorological Tables and the Smithsonian Physical Tables. Work on the Meteorological Tables is now in progress under the editorship of R. J. List of the U. S. Weather Bureau. The Physical Tables will be edited beginning September 1, 1948, by Dr. William E. Forsythe, formerly of the Nela Research Laboratories, Cleveland, Ohio.

The sun and sky radiation studies at Camp Lee, Va., under contract with the Office of the Quartermaster General, were terminated on January 1, 1947, at the completion of 2 full years of observations. These observations included continuous records of the total sun and sky radiation and of the relative energy in the ultraviolet, visible, and infrared portions of the spectrum as received on a horizontal surface, on a plane 45° to the east, and on a plane 45° to the south. Part of the instrumental equipment was left at Camp Lee and observations are being continued there under the sponsorship of the Camp Lee Quartermaster Board. A total of 16 reports were submitted to the Office of the Quartermaster General summarizing the Smithsonian observations.

Under an extension of the contract with the Office of the Quartermaster General, equipment for radiation measurements similar to those made at Camp Lee was prepared for the temporary sea-level station at Miami, Fla., and for the high-altitude, dry station at Montezuma, Chile. These preparations were under the direction of Mr. Hoover, chief of the division. One difficulty encountered in the Camp Lee work was the great amount of time required to read and sum up the many daily records, and special efforts were made to devise an automatic integrator. Mr. Hoover succeeded in working out the details of such a device and three were built by the instrument maker, Mr. Talbert. The device is now in successful operation at the Miami station. It separately sums up the reading of four different recording pyrheliometers as registered on a four-point Brown electronic potentiometer. By simply taking the readings on each of four counters, the total radiation received by each of the four pyrheliometers is obtained. The results have been checked repeatedly against a complete reading of the record and the integrator has proved surprisingly accurate.

Dr. Abbot, research associate of the Observatory, has made further contributions in his studies of relationships between solar changes and weather. Mr. Hildt, mentioned in last year's report as assisting Dr. Arctowski in his researches concerned with the solar and terrestrial atmospheres, found it necessary to end this work on October 1, 1947. Miss Joyce Wilson substituted for Mr. Hildt for the remainder of the fiscal year.

Regular observations for the determination of the solar constant were continued throughout the year at two high-altitude stations, Montezuma, Chile (9,000 ft.), and Table Mountain, Calif. (7,500 ft.). In addition, at Montezuma preparations were made for exposures of certain textiles and observations of the amount and quality of sun and sky light, similar to the work now in progress at the Miami station. However, unexpected delay was encountered in the transfer of part of the equipment to Montezuma so these exposures and observations had not yet been started at the close of the fiscal year.

As stated in last year's report, a cooperative program was arranged between the General Motors Corp., the Quartermaster Department, and the Smithsonian Institution for exposures and radiation measurements to be carried out at the General Motors Test Field at Miami. The program also included the mounting and servicing of the panels and filter boxes by the South Florida Test Service, under the direction of E. M. DeNoon. In November 1947 panel exposures, both in the open and under filters, at an angle of 45° to the south were begun at Miami. The measuring instruments and the filters are similar to those used at Camp Lee, Va. In addition, the spectrobolometer formerly at the Tyrone, N. Mex., station has been mounted and adjusted. Whenever the sky is sufficiently clear of clouds, bolographs are taken just as in our usual solar-constant program. From these bolographs we obtain valuable data concerning sea-level water-vapor conditions as well as additional data on the relative distribution of energy throughout the spectrum as received from direct sunlight. The complete program was started in December 1947.

In July 1947 the Director began a tour in search of the most promising high-altitude site to which to transfer the Miami spectrobolometric equipment at the conclusion of our sea-level observations. It was thought that possibly somewhere in the high plateau region of Mexico sufficiently cloudless and pure skies might be found. With the cordial cooperation of the staff of the National Observatory of Mexico, at Tacubaya, many records of sky conditions were examined and several promising sites were visited. It is regretted that though the climate was uniformly delightful and invigorating, none of these sites proved to be sufficiently cloudless. Floating clouds are very prevalent.

In September, while vacationing in Honolulu, the Director learned of a site on the Island of Hawaii where the annual rainfall is less than 10 inches and the skies described as remarkably clear. He visited that location where, at an altitude of 6,500 ft., he found a road, abundant water supply, electric power and telephone already installed, and skies which may prove to be clear and uniform from day to day.

In October Dr. Abbot and A. F. Moore visited the region of southern California near the Nevada border, including Clark Mountain (7,900 ft.), where the annual precipitation is 3 inches. They encountered excellent skies in this region.

Since tests covering an extended period are the only safe criteria for determining a satisfactory site for a solar station, Mr. Hoover in May 1948 installed a recording Eppley pyrheliometer at each of the following promising sites: (1) Torreón, Coahuila, Mexico; (2) Mountain Pass, Calif., near Clark Mountain; and (3) Pohakuola, Island of Hawaii. The instruments are operated through the kind cooperation of men living near the sites. The records for the month of June 1948 indicate Clark Mountain as having the best skies thus far.

Dr. Abbot and the Director spent a month beginning August 10, 1947, at the Mount Wilson Observatory, Calif., having planned to assist each other on two projects. One project was to redetermine the Smithsonian standard scale of solar radiation. We reconditioned, remounted, and adjusted our standard double water-flow pyrheliometer, last used in 1934, and made a series of careful comparisons between it and two substandard silver-disk pyrheliometers which we had carried by hand from Washington. The mean of 33 comparisons agrees within 1 part in 1,000 with the results of 1934 and 1932. This confirms our belief that the scale of an individual silver-disk pyrheliometer with ordinary care will remain unchanged over a long period of years.

The second project was a continuation of Dr. Abbot's previous work to determine the energy spectra of some of the brighter stars with the aid of the 100-inch Mount Wilson telescope. Dr. Abbot's sensitive radiometer, now under excellent control, permitted actual measurements on eight different stars at eight different wavelengths. Since the percentage of accidental error was rather large, only the general forms of these curves were determined. Dr. Abbot has encouraging plans for improvement in the measurements and he hopes to repeat this project in the near future.

Fiscal year 1949

During the year a new room adjoining the Director's office was built for the administrative assistant and for the files of the Observatory. The resulting consolidation of needed information near at hand has materially improved the efficiency of operation.

Considerable progress can be reported concerning the new revised editions of the Smithsonian Meteorological Tables and the Smithsonian Physical Tables, mentioned in last year's report. R. J. List, editor of the Meteorological Tables revision, had practically completed his manuscript at the end of the fiscal year. The difficult task of revising the Physical Tables, the last revision of which had been issued in 1934, was begun in September 1948 under the direction of Dr. W. E. Forsythe. An office in Cleveland, Ohio, and an assistant were furnished to Dr. Forsythe. At the close of the fiscal year he reports that approximately one-half of the tables for the new edition have been completed.

Previous to 1946 the Observatory had for many years maintained three high-altitude field stations for solar-constant observations. In 1946 the Tyrone station, which for 7 years had been operated on Burro Mountain (altitude 8,000 ft.) in southwestern New Mexico, was abandoned because skies there had progressively deteriorated, mainly the result of increasing mining and smelting operations in that general region. As a temporary measure to aid in studies under contract with the Quartermaster Corps, the Tyrone station equipment was transferred to and installed at Miami, Fla. Since then much effort has been spent to find the most suitable location for a third high-altitude field station to replace the abandoned Tyrone site. In last year's report we mentioned that after careful investigation three promising sites had been chosen for further study and that in May 1948 a recording Eppley pyrheliometer was installed at each of these sites, namely: (1) Torreón, Coahuila, Mexico; (2) Mountain Pass, near Clark Mountain, Calif.; and (3) Pohakuola, Hawaii. The three pyrheliometers were operated for a period of 1 year, ending June 1949. The resulting records indicate the uniformity and the quality of the sky for each day during the period. It is clear from the records that the best skies prevailed at the Clark Mountain location. The second-best site was Pohakuola. This spot, 6,500 feet above sea level on the Island of Hawaii, yielded some records of unusually clear and uniform skies, but such skies were not the rule. At Clark Mountain during the period June 8 to March 31 there were 171 days with skies sufficiently good for satisfactory observations, while at Table Mountain, Calif., during the same period actual observations were made on 135 days. From studies of these records and other sources it appears that the Clark Mountain region is in general considerably drier and more free of haze and clouds than any other high-altitude location at present known in the northern hemisphere.

In view of this, estimates were obtained of the cost of establishing a field station at an altitude of 6,500 feet on the south slope of Clark Mountain. Owing to the prevailing high prices for building materials and labor, the estimates proved to be in excess of available funds. It is hoped that sufficient funds may become available, but pending this the Observatory plans immediately to enlarge its facilities at Table Mountain sufficiently so that it will be possible to proceed without delay with the special experimental problems mentioned in last year's report.

W. H. Hoover, Chief of the Division, in addition to supervision of the work in progress, prepared data and tables which will help to simplify the computations in the field. In the past, to obtain the air mass (or length of path of the solar beam in the atmosphere) it has been necessary to plot carefully a series of theodolite readings against time, to read off desired altitude values, and finally to enter an air-mass-altitude table. With the aid of Hoover's data, the observer, by reading the theodolite at specified intervals, may enter the tables directly to determine the air mass. This eliminates the tedious curve-plotting process.

A new instrument designed by Dr. John W. Evans, of the High Altitude Observatory of Harvard University, and described by him in the Journal of the Optical Society of America (vol. 38, p. 1083, Dec. 1948), was lent to the Astrophysical Observatory by Dr. Menzel of Harvard University to test and to determine its adaptability to Smithsonian work. The instrument is a photometer especially designed for determining the brightness of the sky immediately surrounding the sun. Excellent results have been obtained with it at the Harvard station at Climax, Colo. It is of considerable interest to compare its readings with simultaneous readings of the Smithsonian pyranometer which also measures the brightness of the sky in a zone around the sun. In preparation for comparison tests a rigid mounting has been prepared for the instrument with slow-motion adjustment in altitude and azimuth.

During the fiscal year two silver-disk pyrheliometers, Nos. 80 and 81, were built, calibrated and sold at cost, one to the Hebrew Institute of Technology, Haifa, Palestine, and the other to the Dublin Institute for Advanced Learning. In addition, two modified Ångström pyrheliometers and one special instrument for the spectroscopic determination of atmospheric water vapor have been prepared for the Belgium Meteorological Institute. These were nearly completed at the end of the year.

Dr. C. G. Abbot, research associate of the Observatory, continued his studies of the dependence of weather upon solar changes. This work has been published in Smithsonian Miscellaneous Collections, vol. 111, Nos. 5, 6, and 7. Dr. Arctowski's studies of solar and terrestrial atmospheres were retarded by illness, but his work was resumed before the close of the year.

Daily observations of the solar constant were in progress throughout the year, as far as skies permitted, both at Montezuma, Chile, and at Table Mountain, Calif. The skies during the year were apparently normal at Table Mountain, but at Montezuma the observers noted an unusual number of days with light cirrus clouds.

Early in the year Mr. Hoover carried the Observatory's substandard silver-disk pyrheliometer S. I. No. 5 to Miami for direct comparisons with the pyrheliometers at that station. In February 1949, in the course of changing the personnel at Montezuma, substandard S. I. No. 5 was carried there by the new observer and brought back in April by the retiring observer after intercomparisons had been made. The previous year S. I. No. 5 had been carried to Table Mountain by the Director for similar intercomparisons. Thus there are now very recent direct comparisons between all field pyrheliometers and substandard S. I. No. 5, which in turn was carefully compared in 1947 with the absolute water-flow standard. These many intercomparisons show no material changes in constants. They satisfactorily confirm the adopted scale of pyrheliometry. A revision of Dr. Abbot's paper of 1922 on "The Silver-Disk Pyrheliometer" is in preparation. It summarizes the constants of all silver-disk pyrheliometers and describes certain changes which have been adopted in recent years in the instrument itself and in the method of use.

In June 1945 special radiation measurements were started at Camp Lee, Va., under contract with the Office of the Quartermaster General in connection with a long-range study of the causes for the deterioration of tents and tent materials. This contract has been renewed each year since then and the work has now extended to include similar radiation measurements at Miami, a wet, sea-level station, and at Montezuma, a dry, high-altitude station. The Observatory completed the Camp Lee measurements January 1, 1948, and since then they have been continued by the Quartermaster Board at Camp Lee with the Observatory acting in an advisory capacity and giving assistance when difficulties arise. The measurements at Miami, begun in December 1947, have continued throughout the present fiscal year. Similar radiation measurements and textile exposures were begun at Montezuma in December 1948 and will continue approximately 2 years. Five reports to the Office of the Quartermaster General were made during the year summarizing the data obtained at Miami and at Montezuma.

In January 1949 the Director visited the Miami field station to inspect the work in progress. While there he obtained special bolographs showing the absorption effects of known quantities of water vapor in the atmosphere. Measurements of these bolographs confirmed the correctness of precipitable water curves which Mr. Fowle had determined in earlier work at Washington and which have since been used many times in our solar-constant program. This work is discussed in Smithsonian Miscellaneous Collections, vol. 111, No. 12.

Fiscal year 1950

Progress on the new editions of the Smithsonian Meteorological Tables and the Smithsonian Physical Tables can be reported. The sixth edition of the Meteorological Tables was in press at the end of the year and the manuscript of the ninth edition of the Physical Tables was nearly completed. This new and completely revised edition of the Physical Tables has been compiled under the direction of Dr. William E. Forsythe. Preparation of this manuscript has proved a colossal task because of the great volume of new material made available since the eighth revision was issued in 1932.

Early in June 1950 the Director left Washington on an inspection trip that included both the Montezuma, Chile, and Table Mountain, Calif., field stations. He spent 16 days in June at the first-named station and 9 days in July at the second. Excellent skies prevailed especially at Montezuma during his stay. Many intercomparisons of instruments were made as well as direct comparisons with substandard silver-disk pyrheliometer S. I. No. 5, which he carried with him from Washington. Inventories were made at both stations of all nonexpendable equipment on hand. Various phases of the work were discussed in detail with the personnel of the field stations.

The Montezuma field station has now been in continuous operation for 30 years. Throughout this period an average of three determinations of the solar constant was made on each day that skies were sufficiently clear, and every effort was made to maintain the solar-constant values on the same scale. It seems worth while, therefore, to examine whether in these years of observation there is evidence of a progressive change in total radiation given off by the sun. The following table gives the mean solar constant for three decades:

Period	*Total number of solar-constant determinations (Montezuma, Chile)*	*Mean value of the solar constant*
1921–30 (inclusive)	5,820	1.9431
1931–40 (inclusive)	5,520	1.9463
1941–48 (inclusive)	5,004	1.9478

This increase of one-fourth of 1 percent in the radiation emitted by the sun in two decades (1925–44) is of particular significance in view of evidence that has accumulated of climatic changes in various localities over the earth. On the whole, these changes indicate that average temperatures have increased somewhat during the past 100 years, with an accelerated increase during the past several decades. A very interesting discussion of these evidences is given by Prof. Julian Huxley (Natural History in Iceland, Discovery, vol. 11, No. 3, March 1950).

As stated in last year's report, funds have been requested to reestablish a third field station. Clark Mountain, in southern California near the Nevada border, has been chosen as the most satisfactory available location.

Statistical studies of and final corrections for the observational data from our two field stations (Montezuma and Table Mountain) were carried on under the supervision of W. H. Hoover, chief of the division. Mr. Hoover also supervised the preparation of instruments and equipment for the solar-constant observations, for special research problems in progress at Table Mountain, and for requests for certain instruments received from other institutions. Of these latter, three silver-disk pyrheliometers, each calibrated against the Observatory's standard pyrheliometer, were furnished at cost during the year as follows:

1. S. I. No. 82 to Dominion Physical Laboratory, New Zealand.
2. S. I. A. P. O. No. 17 to Observatorio Cagigal, Caracas, Venezuela.
3. S. I. A. P. O. No. 18 to Central Meteorological Institute, Bucharest, Rumania.

In addition, two modified Ångström pyrheliometers and one special water-vapor spectroscope were furnished to the Central Meteorological Institute at Uccle, Belgium.

A summary of silver-disk pyrheliometry, in the form of a revision of Dr. Abbot's paper of 1922 on "The Silver-Disk Pyrheliometer," was published in December 1949 (Smithsonian Misc. Coll., vol. 111, No. 14). This paper gives the constants and the present locations of more than 90 pyrheliometers that have been constructed and calibrated by the Smithsonian Institution and are now in use in widely scattered parts of the world.

Five progress reports were submitted during the year summarizing observations and exposures of textiles made under contract with the Office of the Quartermaster General as mentioned in previous reports. This work was carried on mainly at Montezuma.

Both Dr. C. G. Abbot, research associate of the Observatory, and Dr. H. Arctowski continued their special studies referred to in last year's report.

At the two continuously operating field stations (Montezuma since 1920 and Table Mountain since 1925) observations for the determination of the solar constant were made on all days having sufficiently clear skies. In addition to this work, at Montezuma considerable time and effort were spent to maintain the necessary radiation measurements in the work being done for the Quartermaster, mentioned above. These measurements were hampered by a lack of sufficient electric power. It is hoped soon to install new batteries and an improved generator. Since March 1, 1950, the Montezuma station has also exposed certain textiles and other materials at the request of the National Bureau of Standards.

With the cooperation of General Motors Corp. and under the sponsorship of the Office of the Quartermaster General, Department of the Army, as mentioned in our reports for 1947 and 1948, the Observatory established at Miami in November 1947 a temporary observing station where exposures to the sun and sky were made, both direct and through filters, of certain tent materials. Measurements of radiation received were made, as had been done previously at Camp Lee, Va. In addition, studies were made of the water-vapor absorption and spectral-energy distribution of sunlight at this moist, sea-level location. The equipment of the former field station at Tyrone, N. Mex., was used in these studies. By July 1949 the work at Miami was nearly completed. Early in August 1949 Mr. Hoover supervised the dismantling of this temporary Miami station and the equipment was transported in two trucks to the Table Mountain field station. Here, with the aid of funds generously given by John A. Roebling, a second observing tunnel was prepared similar to but somewhat larger than the regular tunnel in use at this station. The new tunnel is about 100 feet to the west of the old one.

It is now possible, for the first time since the solar-constant program was inaugurated nearly 50 years ago, to make simultaneous, duplicate, spectrobolometric observations at the two tunnels, each tunnel operating with independent equipment but observing the sun through the same sky. As a preliminary to various special experiments that are contemplated with the new tunnel, there was in progress at the end of the fiscal year a series of duplicate solar-constant observations taken simultaneously. A study of these simultaneous observations will doubtless furnish interesting information concerning the dependability of the instrumental and observational procedures.

Fiscal year 1951

The division of astrophysical research and part of the shop facilities occupy a group of small structures just south of the Smithsonian Building. These buildings were this year sheathed in asbestos shingles to improve their appearance and to make them warmer in winter and cooler in summer.

On February 24 and 25, 1951, the Director attended a conference at the American Academy of Arts and Sciences, Boston, on "The Sun in the Service of Man." The stimulating program and discussions emphasized one fact—that man must learn to make better use of the energy received daily from the sun if he is to avoid hunger and discomfort in the not too distant future. Sixty years ago this fact was uppermost in the mind of Samuel P. Langley when he founded the Astrophysical Observatory.

The two high-altitude field stations for solar observations at Montezuma, Chile, and Table Mountain, Calif., have continued in operation throughout the year. Reestablishment of a third station was still uncertain at the close of the fiscal year inasmuch as the requested funds had not been provided. Clark Mountain, near the Nevada border in southern California, a region whose annual precipitation averages about 3 inches, has been chosen as the best available location in North America for this proposed station.

W. H. Hoover, chief of the division, conducted special studies at the Table Mountain station during October and November 1950. He returned to the station at the close of the fiscal year to continue these studies.

Dr. W. E. Forsythe of Cleveland, Ohio, who during the past 2½ years has prepared the ninth revised edition of the Smithsonian Physical Tables, submitted his completed manuscript on June 1, 1951.

As in previous years, the monthly solar-constant records from the two field stations have been checked, computed when necessary, and final corrections applied.

Four reports have been submitted to the Office of the Quartermaster General summarizing the radiation observations made at Montezuma during the year. These observations, a part of the textile-exposure work under contract with the Quartermaster Department and referred to in previous reports, were completed May 10. The Quartermaster Department has indicated a desire to start a new series of studies at Montezuma and also at the proposed Clark Mountain station.

Some years ago the Observatory developed an instrument called the melikeron to measure outgoing radiation from the earth to space. Several of these instruments have been used with fair success by the U. S. Weather Bureau and others, and it has been our hope to improve the melikeron and make it a more sensitive recording instrument. Inasmuch as the Meteorological Division, Chemical Corps, Camp Detrick, Md., is interested in the same general problem, it was arranged to work cooperatively. At the close of the year a new instrument was being assembled and undergoing preliminary tests and calibration at Camp Detrick.

During the year two silver-disk pyrheliometers were built, calibrated, and sold at cost as follows:

S. I. No. 83 to the Government of Israel, Jerusalem.
S. I. No. 85 to the Air Force, Cambridge Research Laboratories, Cambridge, Mass.

A third pyrheliometer was lent to the Radiological Defense Laboratory, San Francisco, Calif., and three new orders were received. It is a satisfaction to note the continued demand for Smithsonian pyrheliometers. Since Dr. Abbot designed the silver-disk instrument 40 years ago over 100 have been built. Eighty-four have been sold to interested institutions: 34 are in various parts of Europe, 19 in North America, 10 in South America, 14 in Asia and Australia, and 7 in Africa. In consequence the Smithsonian standard scale of radiation has been made available throughout the world.

Dr. Abbot, research associate since his retirement from administrative work, continues his special studies and Dr. Henryk Arctowski continues his researches concerning solar and terrestrial atmospheres.

Last year's report mentioned the new concrete observing tunnel on Table Mountain, about 100 feet west of the old tunnel, in which the spectrobolometric equipment formerly used at Tyrone, N. Mex., had been set up. This gave duplicate equipment in the two tunnels and at the beginning of the year a series of simultaneous observations was in progress, observing through identical skies. The series continued for 40 observing days, including 8 long-method days. Detailed comparisons of the observations showed satisfactory agreement. One unexpected difference persisted through the observations—the ratio of the galvanometer deflections for successive wavelengths changed progressively through the spectrum. The ratio $\frac{\text{old tunnel deflection}}{\text{new tunnel deflection}}$ started at about 1.150 in the violet end and decreased to 0.960 in the red end. These differences in deflection are compensated for by the transmission factors regularly determined for each individual spectrobolometer, and the deflections are altered accordingly.

Following this series of observations, the stellite mirrors in the new tunnel were replaced by aluminized mirrors. As expected, this materially increased the deflections in the new tunnel—a gain of twofold in the red end and approximately fivefold in the violet end. A second series of simultaneous observations, one tunnel with stellite mirrors and the other with aluminized, is now in progress.

Mr. Hoover took with him to Table Mountain a specially built double spectroscope with rock-salt prisms designed to measure the ozone absorption in the infrared between 9 and 10 microns wavelength. This was mounted and tested in the new tunnel.

A new and important project has developed at Table Mountain resulting from a paper published in 1931 by Dr. Oliver R. Wulf, of the U. S. Weather Bureau and the California Institute of Technology, on the determination of ozone by spectrobolometric measurments (Smithsonian Misc. Coll., vol. 85, No. 9). Dr. Wulf has long felt that a method could be developed for daily measurement of the quantity of ozone in the upper atmosphere from the Smithsonian solar-constant records. He bases his method on the relatively weak Chappuis absorption bands in the yellow-orange region of the visible spectrum. Dr. Wulf fortunately was able to spend some days on Table Mountain working on the details of his method. On February 1, 1951, the Table Mountain staff started the required daily measurements. Preliminary results look promising and the method will be strengthened as more data accumulate. It is hoped that a daily determination from our bolographs of the quantity of ozone in the upper atmosphere may become a regular part of our records at the Table Mountain station.

Fiscal year 1952

During the year the metal and glasswork shops serving both divisions of the Observatory were materially improved by the installation of modern lighting equipment, rearrangement of the machines, repainting, reflooring, and the addition of specially built cabinets for storing raw materials. The instrument makers now operate with less eye strain, more convenience, and greater safety.

In August 1951 the Director of the Observatory attended meetings of the Sub-Commission on Actinometry of the World Meteorological Organization held at Brussels, Belgium. In the resolutions adopted by the Sub-Commission the Smithsonian silver-disk pyrheliometer, designed and developed by Dr. C. G. Abbot, is recommended as an instrument for the measurement of direct solar radiation.

The question of establishing a field station in the Clark Mountain, Calif., region, mentioned in previous reports, is still undetermined.

W. H. Hoover, Chief of the Division of Astrophysical Research, spent July and part of August at the Table Mountain, Calif., field station directing the work program and testing several new devices.

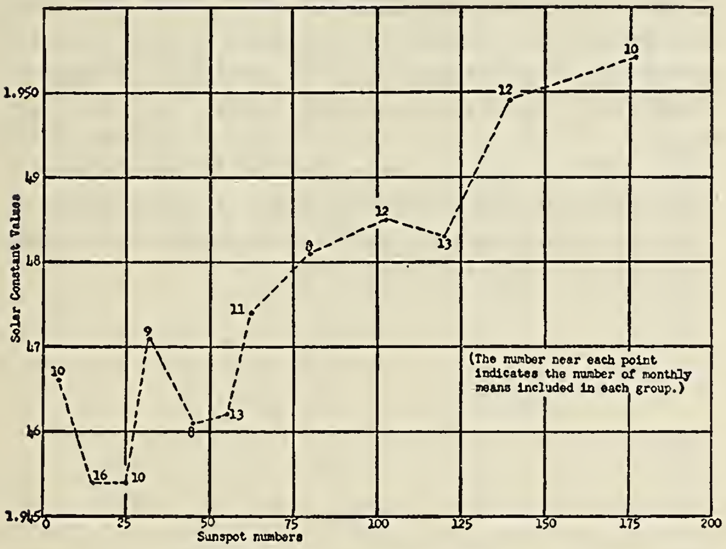


FIGURE 2.—Monthly mean values of the solar constant compared with monthly means of sunspot numbers for the same days.

The ninth revised edition of the Smithsonian Physical Tables is in press. At the end of the fiscal year Dr. Forsythe, who prepared the manuscript, had corrected approximately one-third of the galley proof.

The checking and appraisal of observations of sun and sky radiation made at two high-altitude field stations, Montezuma and Table Mountain, have continued under the direction of Mr. Hoover. Some progress has been made in the preparation of material for a new volume of the Annals of the Astrophysical Observatory.

Incident to the review of results during the past decade, an examination was made to determine what, if any, relationship is apparent between the solar-constant record and the number of sunspots. During the last maximum of sunspots in 1947 the total number of spots was greater than during any maximum since 1778. In 1947 the number averaged 151.6. In 1778 it was 154.4. The next greatest maximum, 139.1, occurred in 1870. The curve in figure 2 shows monthly mean values of the solar constant compared with monthly means of sunspot numbers for the same days. It includes all solar constants graded fair or better during the 11-year period 1940 to 1951. A fairly regular increase in solar constants is apparent with increasing sunspot numbers.

Orders for silver-disk pyrheliometers, built in our shops and calibrated against the Smithsonian standard pyrheliometer, have continued to come in. During the year five instruments were prepared and sold at cost, as follows:

S. I. No. 84 to Centre National de la Recherche Scientifique, Paris, France.
S. I. No. 87 to Helsinki, Finland.
S. I. No. 88 to Institute for Scientific Research, Central Africa.
S. I. No. 89 to National Observatory of Athens, Greece.
S. I. No. 90 to University of Rhode Island.

As of now, a total of 89 silver-disk pyrheliometers have been furnished by the Astrophysical Observatory to interested observatories and institutions in many lands, thus making available throughout the world the Smithsonian standard scale of radiation. In addition, five Ångström compensation pyrheliometers, modified in certain details as experience has dictated, were built and calibrated. Three were sold at cost to the Belgian Consulate General for use in the Belgian Congo.

During the year certain electronic devices were procured as funds permitted. These include a photopen recorder, Golay detector, and electron multiplier photometer. Tests are in progress to determine their most advantageous application to our special needs.

For five years, 1926 to 1931, the Astrophysical Observatory occupied Mount Brukkaros in South-West Africa as a field observing station. At the request of the Meteorological Service of South Africa the Smithsonian observations of total solar radiation during this period on Mount Brukkaros were summarized and made available for publication in a new compendium of South African solar-radiation data.

The Smithsonian standard water-flow pyrheliometer, against which substandard comparisons were last made on Mount Wilson (Calif.) in 1947 by Dr. Abbot and Mr. Aldrich, has been overhauled and tested by Mr. Hoover. It is planned to mount this standard instrument at Table Mountain in the near future for a new series of comparisons against our silver-disk substandards.

An important study by Mr. Hoover is in progress which is designed to clear up certain elusive characteristics of the silver-disk pyrheliometer, such as the cause of the temperature correction which it is found necessary to apply.

A special pyranometer was prepared for future testing at Table Mountain. Its vestibule permits the rapid insertion of four successive filters, transmitting different wavelength bands. Such a device should indicate variations in haze more certainly than does the pyranometer without filters as ordinarily used. It is hoped that this filter pyranometer may prove an important aid in determining atmospheric transmission values required in short-method solar-constant observations.

At the request of the U. S. Weather Bureau another special pyranometer was prepared and calibrated for use in standardizing the Weather Bureau's network of Eppley pyrheliometers. A leveling device and automatic shutter control were added to the pyranometer.

Last year's report mentioned a cooperative arrangement with the Meteorological Division, Chemical Corps, Camp Detrick, Md., to develop a new improved type of melikeron for the measurement of outgoing radiation from the earth to space. One of these instruments has been completed and tested at Camp Detrick. A paper describing this development was read by Dr. S. C. Stern of Camp Detrick at the July meeting of the American Meteorological Society.

Dr. C. G. Abbot, research associate, has continued his studies of relationships between solar and terrestrial phenomena. His results are described in several papers in volume 117 of the Smithsonian Miscellaneous Collections.

In May 1952 a new series of tape exposures was started at the Montezuma station under contract with the Office of the Quartermaster General. These exposures are a continuation of the Quartermaster studies to determine the causes of the deterioration of tentage materials. The tapes include samples of various textiles, and the exposures and radiation measurements are similar to those described in former years.

At the Table Mountain station the interesting study (discussed in last year's report) to determine the quantity of ozone in the upper atmosphere from our daily bolographic records continued under the direction of Dr. Oliver R. Wulf of the U. S. Weather Bureau and the California Institute of Technology. Dr. Wulf has improved the means for obtaining absolute values of the ozone from long-method days. He then uses the long-method results to calibrate the relative values obtained from the short-method observations at air mass 2.5.

In July 1951 Mr. Hoover tested the double spectroscope set up in the new tunnel at Table Mountain. He reports that, unfortunately, the device is not sufficiently rigid to give satisfactory results. Considerable alteration will be necessary. Mr. Hoover also prepared and installed a very satisfactory device for recording the steadiness of the sky during each bolograph. It consists of a sensitive thermoelement mounted in the coelostat beam. The resulting galvanometer deflection, recorded upon a rotating drum, is an index of the steadiness of the sun and sky radiation during each bolograph. This record has proved helpful in appraising pyrheliometer and pyranometer readings at Table Mountain where sudden changes in water vapor content and quality of haze occur fairly frequently.

CHAPTER 2

The Solar Constant Program since 1939

Field stations

As mentioned in the introduction, two high-altitude observing stations (Montezuma, Chile, established 1920, and Table Mountain, Calif., established 1925) are in continuous operation. The third station, originally started in 1926 on Mount Brukkaros, South-West Africa, has successively been transferred to Mount St. Katherine, Sinai Peninsula, in 1933, to Tyrone, N. Mex., in 1938, to Miami, Fla., in 1947, and, finally, to a second observing tunnel on Table Mountain, Calif., in 1950.

The first several years of solar-constant observations at the Tyrone station were made in fairly good skies, a few indeed excellent. In subsequent years, as World War II progressed, the skies became progressively worse. This apparently was caused by the great increase in mining and smelting operations in the surrounding country. In 1946 observations were discontinued. Complete data summarizing the work of this station are given in table 4.

Shortly after closing the Tyrone station the Observatory, under contract with the Office of the Quartermaster General, Department of the Army, began a series of special solar radiation measurements at Miami as a part of the Quartermaster Corps studies of the causes for the deterioration of tent materials. Since spectrobolometric measurements would be of value in the Quartermaster studies, and since also it was of interest to the Observatory to compare observations at a humid, sea-level location with the results of our high-altitude, dry locations, we decided to transfer the Tyrone spectrobolometric equipment by motor truck directly to Miami. The only previous sea-level solar-constant determinations had been made at Washington in the years 1900–05 with pioneer instruments and in very uncertain skies. In Miami the equipment was set up on the test field used jointly by General Motors Corp. and the South Florida Test Service. General Motors had very kindly erected a cement structure according to our specifications with special piers for the coelostat, slit, galvanometer, plate carrier, spectroscope, and bolometer. Though many days at Miami are sunny, the sky seldom is sufficiently uniform to permit solar-constant observations. We were fortunate to obtain long-method observations on 10 days in fairly uniform skies. These long-method days are of particular interest since the atmospheric water vapor content ranges from .5 cm. of precipitable water to over 4 cm. At our high-altitude stations we seldom observe with more than 1.5 cm. Even the wettest of these 10 days, however, yielded plausible transmission coefficients and a reasonable value of the solar constant. These results are summarized in table 6e. Table 15 also gives interesting results concerning the spectral distribution of solar energy in the long-method bolographs obtained at Miami.

Location of third station

During the temporary location of our third field station equipment at Miami, studies were made to locate if possible a satisfactory high-altitude, dry, accessible, and safe location for a permanent station. With world affairs so unsettled it seemed advisable to limit the search to localities in or near the United States or its possessions. Three localities were finally chosen, an Eppley pyrheliometer was mounted horizontally at each, and with Brown recording potentiometers daily records were made of solar radiation received. The three stations were (1) Pohakuola, Hawaii (altitude 6,500 ft.), (2) Weather Bureau station at Torreón, Coahuila, Mexico, and (3) Mountain Pass, near Clark Mountain, Calif. Records were continued for 1 year. By far the best skies occurred at Mountain Pass. The Hawaiian station records indicate some unusually clear and uniform days but they were not the rule. The Mexican location showed a large percentage of floating clouds.

Since sufficient financial aid was not available to reestablish the third station permanently it was thought the best substitute was to set up a duplicate spectrobolometer on Table Mountain. This would permit simultaneous observations with similar equipment through identical skies. In addition, the second observing setup makes possible special experimental studies without interrupting the continuity of the regular solar-constant observations. The second observing tunnel (see plate 2) was constructed in 1950 about 100 ft. to the west of the original tunnel. It was also made somewhat larger than previous tunnels in order to house additional equipment. The Table Mountain location is particularly well suited to special experimental projects because the station is easily accessible, water is abundant, electric power is available, and the skies vary through a wide range from clear to very hazy. The special work in progress and contemplated in the second observing tunnel is discussed in chapter 5.

Alterations made and proposed in solar-constant work as described in volume 6

SPECIAL AIR-MASS TABLES FOR SHORT-METHOD REDUCTIONS.—One step in the reduction of both long- and short-method bolographs is to determine the air mass for each of some 40 wavelengths distributed through the bolograph and for each pyrheliometer reading. The air mass is the ratio of length of path of the solar beam in the atmosphere to the air path if the sun were in the zenith. Thus the air mass is the secant of the angle between the sun and the zenith. The minimum value is 1.0 when the sun's altitude is 90°. For values of 2.0 and greater a correction for refraction is made in accordance with Bemporad's formula (see Lindholm, Nova Acta Soc. Sci. Uppsala, ser. 3, vol. 3, No. 6, p. 10, 1913). A table is constructed giving the air mass for altitudes of the sun from 10° to 90°. During observations readings of the altitude of the sun are made at known times between bolographs and the corresponding air masses read from the table. A plot of time vs. air mass is made, a smooth curve drawn through the points, and the air masses read off for the times needed. This process is time consuming, and it occurred to Mr. Hoover that special tables might be prepared for each field station that with the aid of a stop watch would considerably shorten the process. He therefore prepared two tables (not included here): His table 1 gives the solar altitude 4 minutes and 20 seconds before the time of each of the air masses likely to be used, ranging from 1.1 to 5.0. These are given for each degree of declination of the sun. His table 2 gives the air masses at bolograph places 46, 42, 36, 28, 12, 4, −4, and at the time of the three pyrheliometer readings which are 1.5, 3.5, and 5.5 minutes after the start of the bolograph.

In using these tables, first determine the declination of the sun for the given day and time, taken from the Ephemeris. Then enter table 1 for the altitude of the sun 4 minutes 20 seconds before the air mass chosen for the bolograph. Set the theodolite for this altitude and start the stop watch at the instant the sun reaches it. In 1 minute start the bolograph. The air mass at place 20 on the bolograph is the air mass for which the theodolite was set. Finally enter table 2 with the chosen air mass and declination and read off the air masses at the various places. These air mass tables are in constant use both at Montezuma and at Table Mountain. The observers find that with a stop watch, theodolite, and these tables they can easily determine all needed air masses at a considerable saving in time and eye strain.

Ultraviolet and infrared corrections.—To introduce this discussion, the following (adapted from Ann. Astrophys. Obs., vol. 6, p. 63, 1942) is a brief summary of the long-method solar-constant process:

Observations: We determine by observations the following quantities simultaneously at six different values of the air mass ranging from 5.0 to 1.5, preferably observing in the morning hours:

(1) The total intensity of the solar beam at the station (by pyrheliometers).

(2) The distribution of intensities in the solar spectrum (by spectrobolometer).

(3) The altitude of the sun, to determine the air mass (by theodolite).

Reductions:

(1) By measurement we ascertain the ordinates of the partially smoothed bolographs at some 40 equally spaced intervals in the prismatic spectrum.

(2) By SS curve we correct these ordinates to eliminate differential spectroscopic transmissions.

(3) From band area curves we determine the subtractive areas included between the smoothed curves and the actual bolographs in the great bands.

(4) We divide the pyrheliometer readings by the corresponding summed-up areas included under the bolographic curves. These curves are corrected for band areas and for ultraviolet and infrared regions of spectrum not observed.

(5) We apply the corrections for fractional variations in the ratio $\frac{\text{pyrh.}}{\text{area}}$, just determined, and then extrapolate all bolographic ordinates (e) to zero air mass (e_o) and determine atmospheric transmissions using the slide-rule extrapolating machine.

(6) Finally, the solar constant is

$$(\rho)^2 \times \text{Pyrh.} \times \frac{\Sigma e_o + \text{extra-atmospheric (UV and IR) bands}}{\Sigma e + \text{infra-atmospheric (UV and IR) bands}}$$

where ρ = earth's radius vector, and Pyrh. is expressed in langleys per minute.

Corrections: A detailed discussion (Ann. Astrophys. Obs., vol. 5, pp. 103–110, 1932) has been given of the ultraviolet and infrared corrections which we apply both in the long and in the short method of determining the solar constant. The basis for these corrections and the method by which they were obtained are described in detail.

The corrections adopted are approximately as follows: Ultraviolet correction, 3.44 percent of the measured area after extrapolation to zero air mass; infrared correction, 2 percent of the measured area at zero air mass. Total UV and IR correction is 5.44 percent. These corrections have been used in all reductions since 1925.

In the past 4 years, as studies of related problems caused various investigators to review the solar-constant problem and as new data have been published concerning the ultraviolet and infrared regions of the solar spectrum, a number of statements have appeared in the literature advising revision of our adopted corrections. In most cases the author of each of these statements has assumed, quite naturally, that a change of total UV and IR corrections applied to the summation of the measured spectrum (which extends from $.34\mu$ to 2.4μ) would result in a proportionate increase of the solar-constant value. In what follows we shall show the actual effect of changed corrections.

The revised corrections that have been suggested are summarized as follows:

(1) Schatzmann (Ann. d'astrophys., vol. 12, No. 4, p. 305, 1949) prefers a UV correction of 1 percent, total UV and IR = 3 percent.

(2) C. W. Allen (Observatory, vol. 70, No. 857, p. 154, 1950) suggests UV correction .7 percent larger and IR 3 percent larger, total correction 5.44 + .7 + 3 = 9.14 percent.

(3) T. E. Aurén (Ark. Geophys., svenska Vetensk. Akad., vol. 1, No. 14, p. 395, 1951) feels the corrections are not justified and suggests a solar constant of about 1.80.

(4) H. G. Houghton (Journ. Meteorol., vol. 8, No. 4, p. 270, 1951) suggests corrections

UV .077 langleys per minute, or 4.26 percent
IR .071 langleys per minute, or 3.93 percent
Total correction: 8.19 percent

(5) A. Unsöld (letter dated July 4, 1951) computes these corrections

UV 3.89 percent
IR 4.68 percent
Total correction: 8.57 percent

(6) M. Nicolet (Archiv Meteorol. Geophys. Bioklimatol., ser. B, vol. 3, p. 213, 1951) considers the Smithsonian UV (3.44 percent) is approximately correct, but the IR should be 4 percent instead of 2 percent.

Total correction: 7.44 percent

(7) S. Fritz (Compendium of meteorology, Amer. Meteorol. Soc., p. 18, 1951) believes the UV substantially correct but the IR should be at least 3.1 percent.

Total correction: 6.54 percent

At first sight it is naturally assumed that a percentage increase in the total area resulting from increased UV and IR corrections would produce an equal percentage increase in the solar constant. However, as has been pointed out (Ann. Astrophys. Obs., vol. 5, pp. 109–110, 1932), there is a compensatory effect inherent in Langley's fundamental method which tends to minimize the effect upon the solar constant. To make this evident it is necessary to examine the process in detail.

The intensities for various wavelengths in a bolograph are measured in centimeters and their magnitudes are dependent upon the sensitivity of the galvanometer and other factors. In order to reduce these intensities to known units, pyrheliometer readings of total direct solar radiation are made simultaneously with each bolograph. The pyrheliometer measures in langleys per minute the total radiation received. If the pyrheliometer and the bolograph area measure the same spectral range, then the ratio $\frac{\text{Pyrh.}}{\text{area}}$ should remain constant for all air masses. Any irregularities in this ratio for varying air masses would be a measure of the change in sensitivity of the spectrobolometer. However, the pyrheliometer, whose absorbing surface is lampblack, measures the spectral range approximately .29μ to 10μ, whereas the measured bolograph range is .34μ to 2.4μ.

The UV and IR corrections which we apply thus approximately build up the bolograph total energy to the same spectral range as the pyrheliometer includes. It is obvious that if too small a correction is applied to the bolograph areas, then the mean $\frac{\text{Pyrh.}}{\text{area}}$ will be too large. Also, the sensitivity ratio (see Ann. Astrophys. Obs., vol. 6, p. 77, table 19, 1942) will be smaller for large air masses and larger for small air masses, which tends to decrease the transmission coefficients and thus increases the extrapolated area outside the atmosphere. There are three effects acting to change the solar-constant value:

(1) A UV and IR correction of 10 percent will increase the bolograph area outside the atmosphere by 4.56 percent more than our regular UV and IR correction.

(2) The mean ratio $\frac{\text{Pyrh.}}{\text{area}}$ is at the same time decreased.

(3) The sensitivity factors are also changed in the sense to increase the transmission coefficients, thus decreasing the extrapolated zero air mass values and decreasing the resulting zero air mass uncorrected areas.

The final effect upon the solar constant of adding 10 percent instead of 5.44 percent is the combined effect of these three factors—one tending to raise the solar constant, the other two tending to decrease it. To illustrate the magnitude of these effects we have taken the long-method reduction of August 8, 1949, at Table Mountain and re-extrapolated, first with no UV and IR corrections, and again with 8 percent and with 10 percent UV and IR corrections. Table 1 gives the individual $\frac{\text{Pyrh.}}{\text{area}}$ ratios and the sensitivity ratios for the four cases: (1) No corrections, (2) regular 5.44 percent corrections, (3) 8 percent corrections, (4) 10 percent corrections. Table 2 gives the complete extrapolation for each of the four cases.

Summary: The solar constant increases 0.7 percent for an increase of 4.56 percent in UV and IR correction. It is interesting to note that the range of sensitivity ratios is largest in the first case and smallest in the fourth. This may indicate that the 10 percent correction is more nearly the proper one to apply. However, the sensitivity ratio may also be affected by a progressive change in bolographic sensitivity during the observations, or by the effect upon the pyrheliometry of the brightness of the sky around the sun.

In order to maintain a homogeneous scale in the solar-constant record, the UV and IR corrections that have been used since 1925 will be continued for the present.

Homogeneity of solar-constant values.—It has been the aim of this program throughout to preserve the original scale unchanged. In each case where changes in instruments or tables were made, comparative observations and solar constants were obtained on many days with both the old and the new devices and systems. From comparisons of results the new instruments and systems of reduction were so calibrated in terms of the old as to preserve the scale of solar-constant values unchanged as nearly as possible.

In the past, plotting common days at two stations occasionally showed discrepancies which were always found to have occurred when some known change had occurred at one of the stations, and a proper correction was applied in each case.

In assembling the solar constants of the period subsequent to 1939 it was noted that in the years 1949–52 the Monte-

TABLE 1.—*Sensitivity and ratios of pyrheliometry to areas, long method, Table Mountain, California, August 8, 1949*

Bolograph Number	Air Mass	Pyrh. (ly/min.)	(1) Area (no corr.)	Pyrh./Area	Sensitivity ratio	(2) Area (total corr. 5.44%)	Pyrh./Area	Sensitivity ratio	(3) Area (total corr. 8%)	Pyrh./Area	Sensitivity ratio	(4) Area (total corr. 10%)	Pyrh./Area	Sensitivity ratio
1	4.95	1.1355	37755	30075	.9863	38770	29288	.9895	39203	28965	.9919	39537	28720	.9938
2	4.00	1.2159	40512	30013	.9842	41566	29252	.9882	42059	28909	.9899	42446	28646	.9912
3	2.99	1.3170	43101	30556	1.0020	44335	29706	1.0036	44914	29322	1.0041	45366	29031	1.0045
4	2.51	1.3702	45030	30429	.9979	46388	29538	.9979	47029	29135	.9977	47531	28827	.9975
5	2.00	1.4405	46878	30728	1.0077	48432	29743	1.0048	49166	29299	1.0033	49740	28961	1.0021
6	1.50	1.5072	48363	31164	1.0220	50117	30074	1.0160	50942	29587	1.0131	51587	29217	1.0110
			mean	30494		mean	29600		mean	29203		mean	28900	

TABLE 2.—*Four extrapolations of long method, Table Mountain, California, August 8, 1949*

	(1) UV + IR None			(2) UV + IR = 5.44% (Regularly adopted)			(3) UV + IR = 8%			(4) UV + IR = 10%		
Place	a	R_0	Grade	a	R_0	Grade	a	R_0	Grade	a	R_0	Grade
46	650	245	vg	656	239	vg	653	241	vg +	657	237	vg
44	663	250	vg +	670	245	vg +	670	244	vg +	677	240	vg +
42	685	382	vg +	684	389	e	686	384	vg +	687	383	vg +
40	717	312	e	720	309	e −	722	306	e	719	307	e −
38	735	524	e	739	516	e −	738	517	e	742	512	e
36	773	753	e	775	745	e −	777	740	e	776	740	e +
34	796	824	e	802	804	e −	802	803	e −	805	805	e
32	826	1004	e	828	995	e	832	990	e +	832	984	e +
30	856	1213	e	856	1215	e −	859	1200	e −	861	1199	e
28	878	1425	e	880	1420	e	882	1412	e	886	1408	e
26	889	1620	e	890	1608	e −	895	1600	e −	897	1592	e
24	893	1828	vg +	897	1805	vg +	899	1792	e −	900	1787	e −
22	915	2094	e −	917	2081	e −	919	2066	e −	921	2052	e
20	955	2520	e −	956	2506	e −	960	2487	e −	961	2478	e
19	964	2576	e −	966	2553	e	970	2536	e	971	2529	e
18	973	2561	e	974	2542	e	978	2512	e	980	2506	e +
17	978	2555	e	979	2540	e	982	2517	e −	985	2507	e
16	981	2540	e +	983	2520	e	988	2502	e	991	2496	e
15	985	2522	e −	986	2501	e −	993	2470	e −	991	2473	e +
14	986	2493	e −	986	2477	e −	993	2455	e −	992	2447	e
13	985	2312	e −	986	2306	e −	990	2285	e −	992	2280	e −
12	985	2130	e −	985	2120	e −	990	2108	e −	992	2091	e −
11	985	1927	e −	985	1919	e −	989	1906	e −	990	1904	e −
10	986	1582	vg	989	1564	vg +	991	1563	vg +	993	1562	vg +
9	993	1386	vg	989	1378	vg +	993	1371	vg +	994	1358	vg +
8	989	1226	vg	990	1216	e	993	1208	e −	995	1205	vg
7	991	1078	vg	990	1070	e −	993	1063	e −	996	1057	vg
6	991	936	vg	995	925	vg +	998	918	vg	998	916	vg
5	996	804	vg −	995	807	vg +	999	797	vg	999	794	vg
4	993	707	vg −	994	703	vg +	997	697	vg	999	695	vg
2	997	516	g	993	524	vg +	997	519	vg	997	517	vg
0	991	371	g	990	369	vg +	995	367	vg	995	366	vg
−2	982	219	g	984	216	g	988	215	vg	989	214	vg
−4	966	153	g −	973	148	vg	973	149	g	974	150	g
Area		60935			60498			60076			59864	
UV + IR		0			3344			4800			5986	
Total area		60935			63842			64882			65850	
Mean $\frac{\text{pyrh.}}{\text{area}}$		30494			29600			29203			28900	
Mean solar distance		10279			10279			10279			10279	
Σ		1.910			1.943			1.948			1.956	
Corr. solar constant		1.913			1.946			1.951			1.959	

zuma values were persistently lower than those of Table Mountain. Taking differences of common days we found:

1940–45, mean difference TM — M =	—.0010 calories
1946	+.0014
1947	.0000
1948	+.0007
1949	+.0066
1950	+.0059
1951	+.0080
1952	+.0043

We searched in vain for some change in instruments or constants of instruments, or in the computing process, which might explain this discrepancy. We then made an extensive study of the relationship between precipitable water, pyranometry, and pyrheliometry at both Montezuma and Table Mountain for the years 1934–52. This work is discussed in detail in chapter 7.

We also recalled that the staff at Montezuma a number of times during the 1948–52 period reported a greater number of cloudy days per year, and what seemed to them more haziness than normal.

In the water vapor, pyranometry, and pyrheliometry study of chapter 7 we have grouped for each year all values having equal water vapor and pyranometry at air mass 2.0. At each station in the mean, for a given water-vapor and pyranometer value, the pyrheliometer mean should remain unchanged. Examining table 20, no significant change in pyrheliometer mean occurs at Table Mountain during the period 1934–52. At Montezuma the pyrheliometry remains constant until 1949 when it drops about .4 percent and in subsequent years remains low, as follows:

1949	.0065 ly/min. below 1940–48 mean
1950	.0069 ly/min. below 1940–48 mean
1951	.0080 ly/min. below 1940–48 mean
1952	.0065 ly/min. below 1940–48 mean

This drop coincides with the solar-constant changes noted above. At first sight it would appear that the Montezuma pyrheliometer scale had changed. Excellent and repeated comparisons, however, between substandard silver-disk pyrheliometers (see chapter 4) and the modified Ångström pyrheliometer showed no change in the readings of the latter instrument.

Following are four indications that Montezuma sky conditions have changed since 1948:

(1) Fewer observations have been obtained (more cloudy skies).

(2) Observer's daily notes indicate the skies seem hazier than formerly.

(3) Studies of days of equal water vapor, pyranometry, and pyrheliometry show the relationship changed at Montezuma beginning in 1949, whereas at Table Mountain no significant change has occurred.

(4) There is a drop in Montezuma solar constants, also beginning in 1949; yet we can discover no change of instrumental constants or behavior at either station.

We can only assume that the type of haze at Montezuma probably has altered because of change in average size of dust particles in the atmosphere. In consequence, the spectral distribution of the scattered radiation is changed. This change in the spectral distribution of the sky light is apparently not adequately measured by the pyranometer, and the pyranometer reading is lower than it should be. As a result, the transmission coefficients are too high and the resulting solar constants are too low.

We have long realized the weakness of our pyranometry, especially in certain types of very hazy sky. In chapter 5 we discuss two instrumental changes now being tested which we believe will strengthen our pyranometry. They are the filter form of pyranometer which will detect changes in spectral distribution in sky light and the Harvard photometer which measures sky brightness much closer to the sun than the pyranometer. In addition, Mr. Hoover has studied the changes in bolographic spectral distribution accompanying these abnormal days and finds encouraging indications that his studies may improve the short-method function values. We have great hope that one or a combination of these will eventually reduce the tendency of the pyranometer to give abnormal values in certain hazy skies.

Meanwhile, in view of all this evidence, we feel justified in correcting the lowered Montezuma solar constants 1948–52 in accordance with the annual mean of the common days. In table 4 therefore, the Montezuma values have been raised as follows:

1948 (May to Dec.)	+.004 ly/min.
1949	+.007 ly/min.
1950	.006 ly/min.
1951	.008 ly/min.
1952	.004 ly/min.

Scale of pyrheliometry in the solar-constant record

It has been frequently emphasized in previous volumes of these Annals that the primary purpose of the solar-constant program is to measure the probable variability of the total radiation which the sun emits. To this end we have tried to maintain the original scale unchanged rather than to reduce the solar constants to absolute values.

In pyrheliometry, or the measurement of total direct solar radiation received at the station, stability of the instruments over long periods has been of greater concern than the absolute value of the units used. In the early work at Mount Wilson (1906–20) we used A.P.O. IV and A.P.O. VII, comparatively insensitive prototypes of the present silver-disk instruments, each having a copper instead of silver disk. Their constants were based upon comparisons with the early water-flow standard and intercomparisons with other types of pyrheliometer. In addition to the uncertainty of the standard water-flow scale, no precautions were taken to correct for personal error, watch eccentricity, or different sky areas exposed.

When the Chilean station was started in 1918 at Calama (moved in September 1920 to nearby Montezuma), it was desired to continue the Chilean solar-constant values on the same scale as the Mount Wilson values. The average of the Mount Wilson values 1912–20 (1,244 determinations) on the original arbitrary scale is 1.946 langleys per minute. The method of establishing the scale of the Chilean solar constants has been described (Ann. Astrophys. Obs., vol. 4, pp. 177–182, 1922). During the years 1918–20, long-method observations were made at both Mount Wilson and Calama on a total of 106 common days. These common days served to reduce the Calama-Montezuma solar constants to the scale prevailing at Mount Wilson. In a similar manner, scale corrections have been applied to Table Mountain, St. Katherine, and the other stations to reduce their mean values to the mean value of the established Montezuma scale.

An increasing awareness of the need to improve the accuracy of all components of the solar-constant work has brought about many refinements in pyrheliometry. The tubes of silver-disk pyrheliometers were lengthened to decrease the sky brightness error; pendulums giving accurate time signals were substituted for watches; special reading glasses were introduced to ensure readings free of parallax error; and, before reading, each instrument was brought to air temperature and the disk slightly preheated.[3] A modified form of the Ångström pyrheliometer (described in chapter 4) was adopted in all solar-constant observations. This permits more readings during a bolograph and decreases personal error and the error due to sky brightness. Frequent comparisons are made between the modified Ångström and silver-disk pyrheliometers to check the stability of the former. The silver-disk instruments are in turn compared, as often as can be arranged, with substandard instruments kept at Washington. In recent years whenever possible we have carried by hand a substandard to each field station for comparisons. It is always carefully compared against the "master" substandard both before and after being taken to the field.

Two veteran silver-disk pyrheliometers, A.P.O. 8_{bis} and S.I. 5 are kept as substandard instruments. The "master," A.P.O. 8_{bis}, never leaves the Astrophysical Observatory at Washington. S.I. 5 is frequently carried to the field. Their constants, scale of 1913, .3786 and .3715 respectively, have remained unchanged certainly over 20 years. Proof of this is found in the careful comparisons against the double water-flow standard in the years 1932, 1934, 1947, and 1952 (described in chapter 4). Following are comparisons between substandard and field pyrheliometers during the past six years:

In 1949 and again in 1950, S.I. 5 was carried to Montezuma and compared against S.I. 29 and S.I. 47.

In 1947 and in 1950, S.I. 5 was taken to Table Mountain and compared against A.P.O. 10.

In July, 1952, S.I. 17 was carried to Montezuma and compared against S.I. 29 and S.I. 47.

In 1951, S.I. 86 was carried to Table Mountain and compared with A.P.O. 10.

In 1952, S.I. 5 was again taken to Table Mountain for comparison against A.P.O. 10 and for calibration against the water-flow.

These comparisons are summarized as follows:

At Montezuma:

In 1949, $\frac{29}{5}=1.0134$, const. $29=.3666$

In 1950, $\frac{29}{5}=1.0129$, const. $29=.3668$

In February 1952, $\frac{17}{5}=1.0050$ in Washington from which const. $17=.3697$

In July 1952, $\frac{17}{29}=.9951$, const. $29=.3679$

Mean const. 29 for 3 years $=.3671$

In 1949, $\frac{5}{47}=1.0051$, const. $47=.3734$

In 1950, $\frac{5}{47}=1.0041$, const. $47=.3730$

In 1952, $\frac{17}{47}=1.0135$, const. $47=.3747$

Mean const. $47=.3737$

However, the constants in use at Montezuma for many years are:

$29=.3707$
$47=.3769$

Thus for 29, $\frac{\text{used constant}}{\text{correct constant}}=\frac{.3707}{.3671}=1.0098$

and for 47, $\frac{\text{used constant}}{\text{correct constant}}=\frac{.3769}{.3737}=1.0086$

Therefore, the pyrheliometry as used in the Montezuma work is .92 percent above the Smithsonian Scale of 1913. This correction has been applied to all Montezuma pyrheliometry in table 4, reducing them to the Smithsonian Scale of 1913.

However, at Montezuma a minus correction of .053 langleys or 2.73 percent is applied to the solar constants to reduce to the old Mount Wilson scale. Therefore, actually to place the Montezuma solar constants, as published, on the basis of the Smithsonian Scale of 1913 they should be decreased by .92 percent and increased by 2.73 percent or $+2.73-.92=+1.81$ percent or $+.035$ langleys.

At Table Mountain:

In 1947, $\frac{5}{10}=.9980$, const. $10=.3708$

In 1950, $\frac{5}{10}=1.0014$, const. $10=.3720$

In 1952 (mean of 5 sets), $\frac{5}{10}=1.0049$, const. $10=.3733$

In 1951, $\frac{10}{86}=1.0030$

Constant of $86=.3763$, determined at Washington against A.P.O. 8_{bis}

Constant of $10=.3752$

In 1952, $\frac{5}{13}=1.0458$

$\frac{13}{10}=.9592$

$\frac{5}{10}=1.0031$, const. $10=.3726$

---

[3] Smithsonian Misc. Coll., vol. 111, No. 14, 1949.

Weighted mean of all const. 10 = .3734

Constant S.I. 10 as used = .3649

$$\text{Thus, } \frac{\text{correct constant}}{\text{used constant}} = \frac{.3734}{.3649} = 1.0233$$

Therefore, the pyrheliometry as used at Table Mountain is 2.33 percent below the Smithsonian Scale of 1913. The pyrheliometer values in table 4 are all corrected to the Smithsonian Scale of 1913.

At Table Mountain a + scale correction of .013 langleys, or +.67 percent is applied to the solar constants to reduce to the Montezuma scale. Therefore, to place the Table Mountain solar constants on the basis of the Smithsonian Scale of 1913 they should be corrected by +2.33−.67 percent = +1.66 percent or +.032 calories.

To summarize: The Montezuma solar constants as published should be raised 1.8 percent to base them upon the Smithsonian Scale of 1913; the Table Mountain solar constants as published should be raised 1.7 percent to base them upon the Smithsonian Scale of 1913. All the pyrheliometer values in this volume have been corrected to the Smithsonian Scale of 1913.

We quote the following, published by the authors (Science, vol. 116, No. 3024, Dec. 12, 1952):

> Early in the present century the Astrophysical Observatory of the Smithsonian Institution, under the direction of the pioneer astrophysicist S. P. Langley, began a long-range study of the solar constant and its probable day-to-day variations. The classic work of Abbot and Fowle that followed—their development of instruments and methods, their search for satisfactory sky conditions, their studies of the absorption and scattering of radiation by water vapor, ozone, and dust—placed the solar constant research on a firm foundation.
>
> In continuation of this Smithsonian project, there has now accumulated over a period of nearly 30 years a chronological record of solar constants computed from very specialized observations at high altitude stations in desert regions. The mean of these thousands of values is 1.946 langleys per minute. This mean, it should be noted, is not intended to express the absolute value of the solar constant, since the effort throughout has been to maintain a homogeneous series, preserving the original scale unchanged. The record indicates a surprisingly small, irregular variation, seldom exceeding a range of 2 per cent, with a gradual trend toward larger values. The total increase in the means of successive 5-year intervals is .3 per cent since 1925. The largest increase occurs in the 1946–50 interval, during which the number of sunspots reached a higher value than at any time since the year 1778.
>
> The probable absolute value of the solar constant based upon this mean is largely determined by three factors: First, careful study indicates that the original arbitrary scale of radiation, which has since remained unchanged, is 1.8 per cent below the standard scale adopted by the Smithsonian in 1913. This conclusion is based upon a re-examination of all intercomparisons between pyrheliometers (instruments that measure total solar radiation at the observing station). Second, all comparisons since 1932 against the improved Smithsonian standard pyrheliometer agree in indicating that the correct scale of radiation (in true gram-calories) is 2.4 per cent below the adopted 1913 scale. Third, the corrections applied to the summation of energy in the observed region (wavelengths .34–2.4μ) to allow for the unmeasured energy above and below this range need revision. New data from recent infrared studies and from V-2 rocket ultraviolet results indicate that the corrections applied should be increased by several per cent. One would assume that adding a percentage correction to the measured energy would proportionately increase the resultant solar constant. However, in the process of extrapolating the observations to zero air mass, there is an indirect compensatory factor that acts in the sense to diminish the effect of the increased corrections. From actual re-reductions of several typical long-method days, using a total ultraviolet plus infrared correction larger by 4 per cent of the observed energy, the solar constant is increased only .6 per cent.
>
> Applying the three factors just mentioned (+1.8% to bring to the 1913 scale, —2.4% to reduce to true calories, and +.6% for larger ultraviolet and infrared corrections), the probable absolute value is, curiously enough, equal to the mean value 1.94. It is also identical with the solar constant that has been generally adopted in meteorological literature, based upon early Smithsonian results.

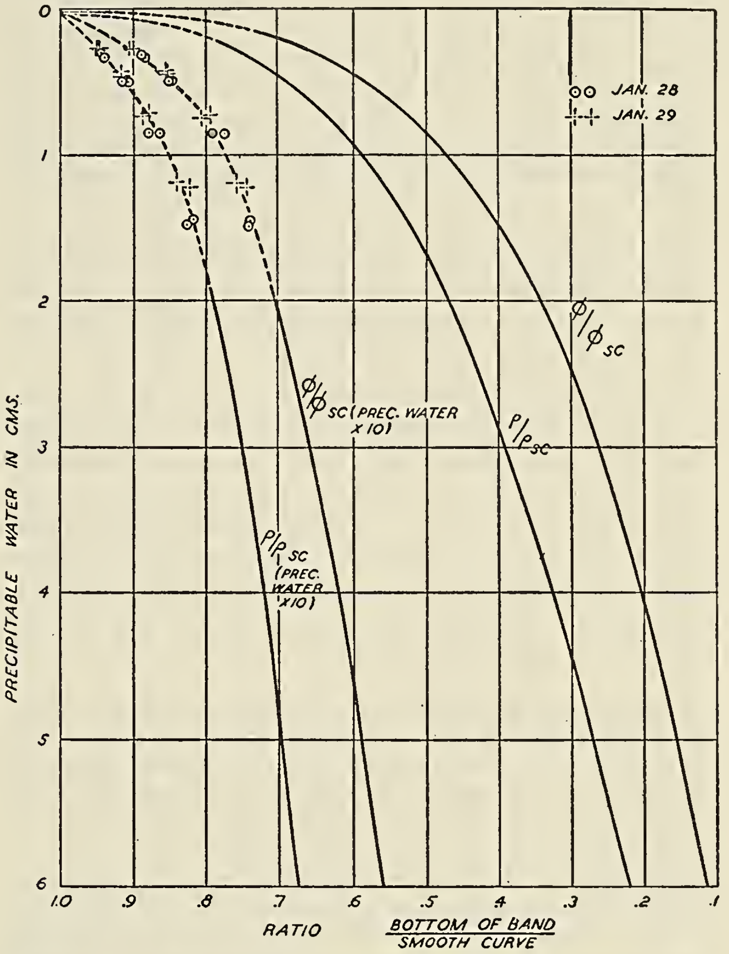


FIGURE 3.—Fowle's precipitable-water curves. (See table 3.)

Fowle's spectroscopic method to determine water vapor

A reliable means for determining spectroscopically the precipitable water in the path of the solar beam was developed in 1912 by F. E. Fowle (Astrophys. Journ., vol. 35, p. 149, 1912; vol. 37, p. 359, 1913). He defined the precipitable water as "the depth of liquid water which if in the form of vapor would be contained in a column of air of the same cross-section reaching vertically to the limits of the atmosphere."

Aldrich (Smithsonian Misc. Coll., vol. 111, No. 12, 1949) commented on this method as follows:

> Fowle's method uses three infrared water-vapor bands, viz., $\rho(\lambda = .935\mu)$, $\phi(\lambda = 1.13\mu)$ and $\psi'(\lambda = 1.47\mu)$. With spectrobolometric

energy curves obtained at Washington by passing the radiation from a bank of Nernst glowers through a known quantity of water vapor, he studied the depths of these absorption bands as affected by changes in width of bolometer strip, slit, and other variables. The depths as expressed in the ratio $\frac{\text{deflection at bottom of band}}{\text{deflection at smooth curve above the band}}$ (or in abbreviated form, ρ/ρ_{sc}, ϕ/ϕ_{sc}, and ψ'/ψ'_{sc}) he correlated with known quantities of water vapor in the path of the beam. The amount of water vapor, expressed in centimeters of precipitable water, was determined from the length of path and from wet- and dry-bulb readings taken at many points along the path of the beam. The accuracy of these water-vapor determinations he checked by absorbing with phosphorus pentoxide and calcium chloride the water vapor in known volumes of air along the path. Thus he developed a table giving for standard conditions of definition and purity of the spectrum, as controlled by slit width, bolometer strip width, time of swing of galvanometer, etc., the precipitable water corresponding to given values of ρ/ρ_{sc} and ϕ/ϕ_{sc}. This table has since been extensively used in the solar-constant work of the Astrophysical Observatory, particularly in daily determinations of the short-method function F.

In 1947 the Astrophysical Observatory temporarily established at Miami, Fla., a solar field station to carry out certain radiation measurements under contract with the Office of the Quartermaster General.

A Smithsonian solar field station operating at a wet, sea-level location is unusual. The only previous spectrobolometric setup at sea level was the original Washington equipment of some 40 years ago, which Fowle used in his precipitable-water studies mentioned above. The Miami setup thus offered opportunity to check the correctness of Fowle's precipitable-water curve. The following quotation from Aldrich (Smithsonian Misc. Coll., vol. 111, No. 12, 1949) summarizes the work.

> A 500-watt projection lamp was placed in the focus of a 9-inch-diameter aluminized mirror of 1 meter focal length. The assembly was mounted on a movable table in the field adjoining the station building. The approximately parallel beam from the mirror fell upon the second mirror of the coelostat and from there passed through the spectrobolometer, housed in the station building.
>
> In Smithsonian solar-constant observations, standard conditions of slit width, bolometer strip width, and time of swing of the galvanometer suspension are maintained. Effort is made to keep the definition constant, as measured by the depth of the Fraunhofer line "h" ($\lambda = .4102\mu$). The ratio of bottom of this band to the smooth curve over the top is kept at .845. In the bolographs of the present work these standard conditions were fulfilled.
>
> Constancy of the lamp source was assured by the interpolation of an electronic voltage regulator capable of holding the potential across the lamp uniform within 1/10 per cent. Bolographs were made on January 28 and 29 for distances lamp source to bolometer strip varying from 19 to 80 meters. Repeated wet- and dry-bulb readings were taken at various positions along the path of the beam both indoors and outdoors, during the time bolographs were being recorded. Hand-aspirated Friez psychrometers were used, checked periodically against a slingtype psychrometer.

TABLE 3.—*Fowle's standard table. Precipitable water vs. depth of band*

[For standard conditions of solar-constant observations: slit width, .3 mm.; time of single swing of galvanometer, 1.4 sec.; ratio of bottom of the Fraunhofer "h" line ($\lambda = .4102\mu$) to smooth curve = .845.]

ρ/ρ_{sc}	ϕ/ϕ_{sc}	Precipitable water in cm.	ρ/ρ_{sc}	ϕ/ϕ_{sc}	Precipitable water in cm.
.210	.104	6.34	.510	.381	1.60
.220	.111	6.09	.520	.392	1.51
.230	.119	5.85	.530	.403	1.42
.240	.127	5.62	.540	.414	1.34
.250	.136	5.40	.550	.425	1.26
.260	.145	5.19	.560	.436	1.19
.270	1.54	4.99	.570	.448	1.12
.280	.163	4.80	.580	.459	1.05
.290	.172	4.61	.590	.470	.98
.300	.181	4.43	.600	.481	.92
.310	.190	4.25	.610	.493	.87
.320	.200	4.08	.620	.504	.82
.330	.209	3.91	.630	.515	.77
.340	.217	3.75	.640	.526	.72
.350	.226	3.59	.650	.537	.67
.360	.234	3.43	.660	.548	.63
.370	.242	3.28	.670	.560	.59
.380	.251	3.13	.680	.571	.55
.390	.259	2.98	.690	.583	.51
.400	.267	2.84	.700	.594	.47
.410	.276	2.70	.710	.606	.43
.420	.285	2.57	.720	.618	.40
.430	.294	2.44	.730	.630	.37
.440	.304	2.32	.740	.642	.34
.450	.315	2.20	.750	.655	.31
.460	.326	2.09	.760	.667	.28
.470	.337	1.98	.770	.680	.25
.480	.347	1.88	.780	.693	.23
.490	.359	1.78			
.500	.370	1.69			

> Figure 1 [see fig. 3, p. 23] gives Fowle's curves for ρ/ρ_{sc} and ϕ/ϕ_{sc}. The dotted lines extend the curves to zero water vapor. The individual points of January 28 and 29 lie on the extended curves within experimental error.

It is gratifying that these points substantially verify the correctness of Fowle's curves.

CHAPTER 3

Summary of Solar Constants, October 1939 through December 1952

The great table 24 of volume 6 of the Annals of the Astrophysical Observatory summarizes the solar-constant results for the period 1923 to October 1939. Since then we have continued the program without substantial changes in the observations or in the short-method tables to determine the solar constants. Such changes as have been made are discussed in chapter 2.

Table 4, continuing table 24 of volume 6, consists of 10 columns.

Column 1 gives the year, month, day and Greenwich mean time of the observations.

Column 2 indicates the station. M represents Montezuma, T, Table Mountain, and Ty, Tyrone, N. Mex.

Column 3 gives the air mass (M) for the instant when the bolograph was being observed at spectrum place 20.

Column 4 is the precipitable water (H_2O) in 1/100 centimeters.

Column 5 gives the Function (F) computed from the precipitable water and the pyranometry as previously explained in detail (Ann. Astrophys. Obs., vol. 6, pp. 65–71, 1942).

Column 6 gives the pyrheliometer value, or total solar radiation at the station at the given air mass, corrected to mean distance between the earth and the sun, expressed in langleys (gram calories per square centimeter) per minute.

Column 7 is the pyranometer reading, or brightness of the sky in a zone concentric about the sun, corrected to mean solar distance, also expressed in langleys per minute.

Column 8 is the solar constant in langleys per minute.

Column 9 gives the grade, where *a* is excellent, *b* very good, *c* good, *d* fair, *p* unsatisfactory.

Column 10 gives the preferred mean solar constant for the day.

To avoid the use of decimals and zeros, the pyrheliometry (column 6) is to be understood as expressed in units of 1/1000 langley, and the pyranometry (column 7) in units of 1/10000 langley. Also to save space and repetition, each solar constant (column 10) should have 1.9 prefixed, so that for 52 read 1.952. All pyrheliometer values should have 1. prefixed, so that for 470 read 1.470.

It is important to note, in addition, that the pyrheliometer values are on the basis of the Smithsonian Scale of 1913. To change to actual langleys per minute they should be reduced by 2.5 percent (see discussion of standard pyrheliometer, chapter 4). This is also true of the pyrheliometer values in table 24 of volume 6.

As explained in chapter 2 (p. 23), however, all the solar constants as given in both table 24, volume 6 of the Annals, and table 4 of this volume should be increased by 1.8 percent to be on the Smithsonian Scale of 1913.

For the convenience of those interested in mean values of the solar constant, table 5 (p. 94), giving decade, monthly, and yearly means, immediately follows table 4.

The summary of data given in table 4 gives no information concerning the transmission coefficients determined in the long-method observations. We have therefore assembled representative, good-grade, long-method observations at Montezuma, Table Mountain, St. Katherine, Tyrone, and Miami in table 6 (p. 95).

In table 6, column 2 is the "precipitable water" or the depth of liquid water which would be produced by condensing all the water vapor in the atmosphere vertically above the observer.

Column 3 is the pyrheliometer value at air mass 2.0. All pyrheliometry values are in langleys per minute (Smithsonian Scale of 1913). Then follow the transmission coefficients for 10 different wavelengths.

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1939											
9–30	13	M	2.20	28	A	—7	496	87	59	p	
	13		2.00	27	A	—8	505	82	32		
	13		1.80	24	A	—15	558	73	58		
10–1	13	M	2.20	12	A	—37	529	68	43	c	
	13		2.00	11	A	—41	556	62	39		
	13		1.80	10	A	—43	592	58	42		41
10–2	13	M	2.20	16	A	—22	513	79	43	c	
	13		2.00	16	A	—18	541	78	53		
	13		1.71	16	A	—24	584	65	46		47
10–4	13	M	2.00	30	A	—16	503	75	33	b	
	13		1.80	30	A	—21	532	67	35		
	13		1.50	30	A	—19	582	58	37		35
10–5	13	M	2.20	25	A	—18	503	79	59	d	
	13		2.00	25	A	—20	532	73	59		
	13		1.80	24	A	—25	551	66	44		54
10–6	13	M	2.49	15	A	—19	477	90	37	c	
	13		2.00	14	A	—24	542	75	36		
	13		1.49	17	A	—13	609	66	41		38
10–10	12	M	2.19	20	A	58	484	144	51	p	
	12		2.00	21	A	94	500	147	49		
	13		1.80	22	A	60	546	119	60		
10–12	13	M	1.80	19	A	—1	540	85	30	c	
	13		1.50	19	A	—8	589	68	32		31
10–13	12	M	2.20	14	A	—29	512	75	33	c	
	12		2.00	14	A	—30	536	70	31		
	13		1.80	14	A	—30	562	66	34		33
10–14	12	M	2.19	23	A	—11	508	86	59	p	
	12		2.00	24	A	—12	520	80	47		
	13		1.80	23	A	—11	547	76	43		
	16	T	2.50	39	8	—70	428	97	59	d	
	16		2.21	40	8	—75	464	90	52		51
10–15	12	M	2.19	27	A	7	495	100	59	d	
	12		2.00	26	A	6	518	93	52		
	13		1.80	25	A	5	536	87	41		
	16	T	2.20	44	8	—31	443	108	47	b	
	17		2.00	47	8	—26	465	106	48		
	17		1.81	50	8	—20	484	104	46		48
10–16	15	T	2.20	41	8	—40	445	104	42	b	
	16		2.00	44	B	—34	469	102	49		
	16		1.80	45	8	—45	499	94	49		47
10–17	15	T	2.49	30	8	—74	444	94	60	c	
	16		2.00	33	8	—79	500	83	56		
	17		1.50	39	8	—87	558	71	51		56
10–18	12	M	2.20	32	A	—7	485	86	50	c	
	12		1.99	35	A	—1	513	84	58		
	13		1.80	31	A	—3	540	79	49		
	22	T	2.00	68	C	23	423	121	27	p	
	23		2.21	70	C	32	390	133	20		45
10–19	12	M	2.20	22	A	—20	501	80	48	c	
	12		2.00	21	A	—21	526	74	41		
	13		1.80	19	A	—27	557	67	37		
	16	T	2.49	28	8	—101	448	84	57	c	
	17		2.00	28	8	—101	507	74	54		
	18		1.50	38	B	—40	548	84	46		47
			Long method						25		
10–20	12	M	2.19	18	A	—15	507	85	39	b	
	12		1.99	17	A	—18	533	78	37		
	13		1.80	17	A	—17	559	74	42		
	16	T	2.49	37	8	3	403	132	43	c	
	17		2.00	37	8	—19	480	106	49		
	18		1.50	43	8	—33	545	88	49		42
			Long method						62		
10–21	12	M	2.20	25	A	8	485	101	43	c	
	12		2.00	24	A	3	518	92	51		
	12		1.80	23	A	2	543	85	44		
	17	T	2.00	32	8	—64	494	89	50	d	
	20		1.41	30	8	—88	588	66	55		48
10–22	12	M	2.20	46	8	49	446	127	43	d	
	12		2.00	45	A	40	472	118	28		
	12		1.79	43	A	47	500	108	29		
	16	T	2.49	37	8	—11	411	124	48	p	35
10–23	12	M	2.19	35	A	13	466	102	39	b	
	12		1.99	35	A	12	495	94	39		
	12		1.80	34	A	9	523	86	36		38
10–24	12	M	2.20	44	A	30	450	111	37	c	
	12		1.80	43	A	26	510	94	38		
	13		1.50	39	A	22	561	80	38		38
1939—Continued											
10–25	12	M	2.50	38	A	61	395	158	16	p	
	12		2.00	37	A	54	478	125	27		
	13		1.50	33	A	43	564	95	34		
			Long method						35		
	16	T	2.50	9	A	15	486	135	70	p	
	17		2.20	7	A	13	524	125	61		
	17		2.00	7	A	11	548	117	62		
10–26	12	M	2.20	26	A	10	477	103	38	c	
	12		2.00	26	A	8	510	94	44		
	12		1.80	24	A	8	544	85	47		
	16	T	2.49	26	8	—80	455	91	66	c	
	17		2.00	28	8	—90	514	78	63		
	19		1.50	39	8	—73	566	74	61		50
			Long method						52		
10–27	12	M	2.20	23	A	9	489	102	42	b	
	12		2.00	21	A	5	518	94	42		
	12		1.80	21	A	8	548	85	40		
	16	T	2.50	95	D	16	380	83	55	c	
	17		2.01	91	D	15	451	74	55		
	19		1.50	85	D	10	526	61	55		46
			Long method						55		
10–29	12	M	2.20	49	8	97	418	174	27	p	
	12		2.00	49	8	103	438	166	18		
	12		1.80	48	8	111	469	159	22		
10–30	12	M	1.80	27	A	17	529	90	35	d	
	13		1.50	26	A	8	573	80	28		
	17	T	2.19	32	8	—95	483	81	53	c	
	17		2.00	32	8	—100	507	75	53		
	18		1.80	34	8	—103	535	70	52		47
10–31	12	M	2.20	32	A	24	462	113	27	d	
	12		2.00	29	A	19	487	102	24		
	12		1.80	29	A	17	522	94	33		
	17	T	2.20	67	C	—52	440	79	47	b	
	17		2.00	70	C	—54	470	74	49		
	18		1.80	63	C	—58	502	67	48		43
11–1	12	M	2.00	30	A	29	488	109	30	d	
	13		1.80	30	A	27	516	100	34		
	13		1.50	28	A	25	574	86	44		
	17	T	1.95	17	A	—25	539	72	49	c	
	17		1.88	17	A	—26	550	70	50		
	18		1.80	19	A	—24	561	69	58		47
11–2	17	T	2.00	38	8	—99	491	77	50	c	
	17		1.91	40	8	—100	508	75	55		
	18		1.80	43	8	—101	517	74	54		53
11–3	17	T	2.49	32	8	—108	453	81	65	c	
	17		2.20	31	B	—115	486	74	49		
	17		2.00	31	8	—117	514	69	57		57
			Long method						59		
11–6	18	T	1.70	77	D	35	489	96	51	p	
	19		1.58	85	D	42	495	98	48		
	19		1.57	80	D	46	494	103	48		
11–7	17	T	2.50	109	D	32	372	95	63	d	
	17		2.00	110	D	30	434	83	52		
	18		1.80	115	D	35	466	79	52		56
			Long method						63		
11–8	12	M	2.00	42	A	21	487	98	44	c	
	12		1.80	43	A	16	518	87	45		
	13		1.50	37	A	11	566	74	39		43
11–9	12	M	1.80	18	A	—13	556	76	41	d	
	13		1.68	16	A	—16	571	69	33		
	13		1.50	17	A	—14	603	65	30		
	17	T	2.00	50	C	7	469	108	52	c	
	18		1.91	47	C	6	481	104	51		
	18		1.80	47	C	—4	493	96	53		46
11–10	12	M	1.81	17	A	—4	552	83	38	p	
	17	T	2.49	21	A	—14	463	91	55	c	
	18		1.80	29	8	—61	532	84	56		55
			Long method						38		
11–11	12	M	2.18	22	A	5	487	99	33	p	
	12		2.00	20	A	2	527	92	47		
	12		1.80	21	A	—1	552	83	45		
	17	T	2.50	22	A	—22	460	83	57	b	
	17		2.20	22	A	—21	476	78	56		
	17		2.00	22	A	—20	523	75	58		57
			Long method						57		
11–12	12	M	1.80	20	A	7	541	89	35	d	
	13		1.66	19	A	2	559	81	26		
	13		1.50	19	A	1	577	74	34		32
1939—Continued											
11–13	12	M	2.20	19	A	—8	503	90	46	d	
	12		1.95	21	A	—5	534	84	50		
	12		1.80	20	A	—11	550	77	39		
	17	T	2.51	15	A	—24	474	86	53	c	
	18		2.00	18	A	—24	532	74	53		
	18		1.80	22	A	—20	549	71	46		49
			Long method						53		
11–14	12	M	2.20	25	A	—13	504	84	55	d	
	12		2.00	20	A	—23	528	73	40		
	12		1.80	20	A	—18	551	72	40		45
11–15	13	M	1.49	19	A	—28	608	56	46	p	
	17	T	2.50	36	8	2	419	128	64	c	
	18		2.00	40	8	—2	479	112	62		
	18		1.80	44	B	—12	505	104	60		62
			Long method						62		
11–16	12	M	2.00	15	A	—30	540	69	40	c	
	12		1.81	15	A	—28	570	67	52		
	13		1.50	14	A	—25	617	59	45		
	17	T	2.49	40	B	—16	415	121	56	c	
	18		2.00	38	8	—27	480	103	51		
	18		1.80	41	8	—37	508	95	55		50
			Long method						61		
11–17	12	M	2.50	14	A	—17	477	92	43	c	
	12		2.01	13	A	—16	538	81	35		
	13		1.50	13	A	—10	609	68	35		
	18	T	2.00	31	8	—45	504	95	60	c	
	18		1.89	31	8	—45	518	92	57		
	18		1.80	29	8	—47	531	89	59		48
11–18	17	T	2.50	27	B	—34	435	113	58	c	
	18		2.00	28	8	—45	501	95	58		
	18		1.80	27	B	—51	529	88	55		58
			Long method						47		
11–19	12	M	2.00	32	A	9	499	93	44	b	
	12		1.80	33	A	8	529	86	42		
	13		1.49	29	A	3	579	72	41		
	17	T	2.48	18	A	—2	453	109	48	b	
	17		2.20	18	A	—3	487	100	45		
	18		2.00	19	A	—4	516	93	52		45
			Long method						51		
11–20	12	M	2.20	41	A	20	449	104	24	c	
	12		2.00	38	A	21	477	99	24		
	12		1.80	38	A	20	509	91	25		
	17	T	2.49	18	A	—6	457	104	52	b	
	18		2.20	16	A	—4	494	100	48		
	18		2.00	16	A	—8	520	91	45		40
11–21	12	M	2.00	21	A	—4	512	87	29	d	
	12		1.80	20	A	—9	545	79	33		
	13		1.50	19	A	—8	602	68	46		
	17	T	2.20	31	8	—106	478	77	46	c	
	18		2.09	30	8	—105	496	75	53		
	18		2.00	29	8	—108	506	72	48		45
11–22	12	M	1.69	22	A	12	554	88	30	d	
	13		1.56	23	A	17	575	86	42		
	13		1.46	21	A	17	597	80	47		
	17	T	2.50	37	B	—67	424	100	46	b	
	18		2.00	37	B	—69	485	87	44		
	19		1.80	38	B	—71	515	82	49		44
			Long method						51		
11–23	12	M	2.01	26	A	44	492	122	31	c	
	12		1.80	26	A	44	524	113	35		
	13		1.44	23	A	36	581	93	35		
	17	T	2.49	31	B	—87	439	90	52	b	
	17		2.20	30	B	—88	475	83	48		
	18		2.00	32	8	—88	499	79	51		45
			Long method						43		
11–25	12	M	2.00	28	A	—7	504	92	37	c	
	12		1.80	29	A	—9	532	85	36		
	13		1.50	32	A	—6	572	74	37		37
11–26	12	M	1.80	40	A	1	520	78	43	c	
	12		1.66	38	A	2	541	73	39		
	13		1.50	41	A	6	564	69	42		41
11–27	12	M	2.20	29	A	32	473	120	48	c	
	12		2.01	31	A	28	502	108	52		
	12		1.80	30	A	25	528	98	46		49
11–29	17	T	2.49	37	B	—19	410	119	43	b	
	18		2.20	35	8	—27	451	108	39		
	18		2.00	37	B	—22	475	104	41		41

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1939—Continued											
11–30	12	M	2.00	26	A	30	505	111	47	c	
	12		1.80	25	A	30	531	104	44		
	13		1.50	24	A	29	585	90	45		
	17	T	2.49	56	C	—43	415	89	59	c	
	18		2.20	56	C	—44	451	82	58		
	18		2.00	57	C	—47	473	77	52		50
12– 1	12	M	2.00	20	A	—5	531	87	49	c	
	12		1.79	19	A	—13	555	76	41		
	13		1.50	19	A	—6	604	70	47		
	18	T	1.95	40	B	—117	506	70	55	c	
	18		1.91	41	B	—119	512	69	56		
	19		1.80	41	B	—124	523	65	51		50
12– 2	12	M	1.99	38	A	56	481	125	36	c	
	12		1.80	36	A	54	509	116	31		
	13		1.50	35	A	56	555	101	41		36
12– 3	12	M	2.00	44	B	127	437	190	23	p	
	12		1.80	44	B	127	465	175	16		
	13		1.50	41	B	104	529	134	23		
12– 4	12	M	2.00	51	B	53	472	119	55	p	
	12		1.80	47	B	47	505	107	41		
	13		1.50	44	A	38	553	88	32		
	17	T	2.50	33	B	—93	438	87	52	b	
	18		2.20	33	B	—93	476	82	51		
	18		2.00	32	B	—100	501	76	50		50
			Long method						50		
12– 5	18	T	2.07	148	D	44	410	81	69	p	
	18		2.00	151	D	45	417	80	67		
	18		1.94	156	D	47	421	79	66		
12– 6	12	M	2.01	34	A	40	482	116	32	c	
	12		1.81	32	A	36	515	106	40		
	13		1.50	33	A	30	563	87	33		35
12– 7	12	M	2.49	44	A	30	411	121	35	b	
	12		1.99	43	A	29	481	103	36		
	13		1.50	46	B	41	550	88	36		36
12–11	12	M	2.00	47	B	6	486	79	39	b	
	12		1.80	47	B	5	513	73	42		
	13		1.50	48	B	10	559	65	40		
	17	T	2.48	31	B	—95	452	87	66	c	
	17		2.20	30	B	—93	485	81	57		
	18		2.00	26	B	—92	517	77	61		47
12–12	12	M	1.99	57	B	23	475	89	47	c	
	12		1.80	56	B	26	498	87	43		
	13		1.45	55	B	28	556	73	44		
	17	T	2.50	15	A	—7	468	106	55	b	
	18		2.20	13	A	—10	509	96	54		
	18		2.00	13	A	—12	535	89	54		51
			Long method						63		
12–14	12	M	1.80	72	B	95	469	136	57	p	
	17	T	2.50	28	B	118	410	174	68	c	
	18		2.20	28	B	132	448	166	62		
	18		2.00	27	B	131	476	157	59		63
12–15	17	T	2.49	64	C	176	352	254	0.08	p	
	18		2.20	66	C	139	399	205	90		
	19		2.00	66	C	137	430	190	92		
12–16	12	M	1.74	82	C	98	472	129	54	d	
	13		1.61	80	C	91	496	117	55		
	13		1.50	75	C	104	514	114	52		54
12–18	12	M	1.80	44	A	7	506	80	35	d	
	13		1.60	46	B	20	545	77	45		
	13		1.40	45	A	14	574	69	42		
	19	T	1.88	61	C	—46	486	76	54	c	
	20		1.87	64	C	—43	482	78	48		
	20		1.88	64	C	—48	484	75	50		47
12–19	12	M	2.18	27	A	—18	520	74	51	d	
	12		2.00	26	A	—21	546	68	45		
	13		1.50	27	A	—1	584	70	44		
	17	T	2.49	44	B	—110	426	85	51	b	
	18		2.20	42	B	—112	465	77	50		
	19		2.00	40	B	—109	492	74	48		49
			Long method						61		
12–20	12	M	2.00	19	A	—21	536	75	55	d	
	12		1.80	18	A	—22	565	70	44		
	13		1.50	17	A	—22	609	60	43		
	20	T	1.88	11	A	—28	547	72	52	c	
	20		1.90	12	A	—26	542	74	51		50
12–21	12	M	1.81	18	A	—9	551	79	37	p	
	13		1.50	13	A	—17	601	64	27		
	13		1.37	13	A	—10	636	61	43		
1939—Continued											
12–21	18	T	2.20	16	A	—14	501	89	51	b	
	18		2.09	20	A	—6	504	93	48		
	19		2.00	24	A	—4	511	90	52		50
12–22	12	M	2.00	26	A	12	511	97	47	c	
	12		1.80	24	A	5	541	87	42		
	13		1.50	22	A	3	601	74	56		
	17	T	2.50	16	A	—27	473	82	50	b	
	18		2.20	15	A	—27	512	77	52		
	19		2.00	14	A	—28	539	73	54		50
12–23	12	M	2.00	19	A	—2	528	90	49	c	
	12		1.81	18	A	—4	557	82	49		
	13		1.50	17	A	—2	599	72	41		46
12–24	12	M	1.99	31	A	22	494	103	40	d	
	12		1.80	25	A	12	543	87	50		
	13		1.50	18	A	—3	596	71	38		43
12–25	12	M	2.00	33	A	20	491	101	42	c	
	12		1.81	35	A	21	520	93	45		
	13		1.62	35	A	18	556	84	49		
	17	T	2.50	9	A	—18	487	96	63	c	
	18		2.20	10	A	—10	523	98	62		
	19		2.00	10	A	—6	542	97	55		50
12–26	12	M	2.00	36	A	41	487	116	39	c	
	12		1.80	35	A	39	518	106	44		
	13		1.50	32	A	40	561	94	30		38
12–29	12	M	2.00	78	C	206	405	203	47	d	
	12		1.81	78	C	211	433	190	47		
	13		1.64	75	C	219	462	178	37		44
12–30	12	M	1.80	66	B	83	470	128	44	c	
	13		1.59	69	B	92	507	122	52		
	13		1.50	65	B	89	516	115	41		46
12–31	12	M	1.99	74	B	109	432	160	57	p	
	12		1.81	75	B	107	461	146	60		
	13		1.50	70	B	99	515	120	47		
	18	T	2.50	63	C	—56	401	82	41	b	
	18		2.20	70	C	—57	436	76	46		
	19		2.00	69	C	—55	461	73	45		44
			Long method						58		
1940											
1– 2	12	M	1.80	69	B	132	455	168	50	c	
	13		1.67	70	B	138	472	163	43		
	13		1.50	72	B	138	506	148	51		48
1– 7	13	M	1.62	62	B	121	493	149	46	d	
	13		1.50	64	B	128	507	144	45		
	13		1.40	62	B	125	532	134	44		45
1– 8	13	M	1.79	59	B	85	481	136	48	d	
	13		1.65	57	B	88	497	128	39		
	13		1.50	63	B	101	521	124	50		46
1– 9	12	M	2.01	99	C	205	391	206	56	d	
	13		1.80	101	C	209	417	193	44		
	13		1.50	97	C	199	472	161	37		46
1–10	12	M	2.00	68	B	101	440	155	46	c	
	13		1.81	67	B	97	463	141	44		
	13		1.50	72	B	114	506	130	46		45
1–11	12	M	1.99	110	C	169	386	189	40	d	
	13		1.80	110	C	168	427	174	57		
	13		1.50	105	C	170	476	149	41		46
1–12	12	M	2.00	109	C	203	378	208	37	d	
	13		1.80	111	C	197	414	189	42		
	13		1.50	110	C	200	469	164	39		39
1–15	17	T	2.49	04	A	—39	513	81	49	b	
	18		2.20	04	A	—40	559	74	44		
	18		2.00	04	A	—39	576	72	42		45
1–16	17	T	2.49	11	A	—31	486	79	52	b	
	18		2.20	10	A	—32	517	74	44		
	18		2.00	10	A	—33	548	70	50		49
1–17	17	T	2.50	15	A	—28	468	79	46	b	
	18		2.20	14	A	—29	508	74	48		
	18		2.00	15	A	—29	533	70	51		48
1–18	17	T	2.50	9	A	—32	490	80	52	b	
	18		2.20	10	A	—31	522	75	49		
	18		2.00	11	A	—30	545	72	51		51
1–19	13	M	1.73	157	C	137	421	161	57	p	
	14		1.50	150	C	141	454	143	41		
	14		1.38	153	C	142	484	134	52		
1–21	13	M	1.80	100	C	120	438	147	47	c	
	13		1.67	103	C	121	462	134	46		
	13		1.50	97	C	115	494	124	41		45
1940—Continued											
1–22	12	M	2.01	114	C	152	387	182	44	d	
	13		1.80	110	C	155	427	167	53		
	13		1.50	113	C	131	483	133	44		47
1–23	14	M	1.36	141	C	161	484	139	35	p	
	14		1.31	139	C	152	494	134	40		
	14		1.26	132	C	164	502	131	30		
1–24	13	M	1.80	96	C	33	463	103	54	d	
	13		1.67	92	C	45	484	102	42		
	13		1.50	89	C	52	509	95	49		48
1–25	12	M	2.00	64	B	31	467	94	45	c	
	13		1.81	61	B	32	494	89	46		
	13		1.50	53	B	21	547	72	43		45
1–26	13	M	1.79	46	B	21	516	86	51	d	
	13		1.64	45	B	22	530	82	34		
	13		1.50	42	A	17	559	76	41		42
1–27	12	M	2.49	54	B	39	403	120	46	c	
	12		2.00	50	B	32	476	101	45		
	13		1.50	42	A	13	562	74	40		44
			Long method						44		
1–28	12	M	2.00	59	B	49	464	113	50	d	
	13		1.80	55	B	45	498	103	51		
	13		1.50	53	B	43	542	87	39		
	17	T	2.50	58	C	—46	399	87	38	p	47
1–29	13	M	1.80	81	C	106	459	136	58	d	
	13		1.64	84	C	111	485	129	58		
	13		1.49	83	C	112	509	118	51		56
1–30	12	M	2.00	65	B	57	457	117	49	d	
	13		1.80	65	B	56	487	107	47		
	13		1.50	60	B	46	537	87	38		45
1–31	12	M	2.00	81	C	104	426	147	48	d	
	13		1.80	77	C	108	461	136	53		50
2– 1	13	M	1.80	58	B	81	481	131	43	d	
	13		1.62	55	B	79	512	120	44		
	13		1.50	56	B	78	539	110	54		47
2– 2	13	M	1.80	59	B	58	488	111	49	c	
	13		1.64	55	B	53	513	101	39		
	13		1.50	57	B	53	536	93	42		43
2– 3	13	M	2.00	68	B	88	438	143	41	d	
	13		1.80	66	B	87	472	132	51		
	13		1.50	73	B	92	519	114	49		47
2– 4	13	M	2.00	59	B	58	454	120	40	c	
	13		1.81	62	B	59	481	111	41		
	13		1.50	56	B	55	537	95	42		41
2– 5	13	M	2.01	44	A	18	480	95	41	c	
	13		1.80	44	A	17	514	88	45		
	13		1.50	46	B	25	555	77	39		
	17	T	2.47	57	C	—32	395	97	38	c	
	17		2.19	55	C	—24	435	95	46		
	18		1.99	55	C	—29	462	87	44		42
2– 6	13	M	2.00	39	A	18	484	97	39	c	
	13		1.80	38	A	17	520	89	47		
	13		1.50	34	A	13	566	76	38		41
2– 7	12	M	2.20	26	A	1	482	95	45	c	
	13		2.00	27	A	1	509	89	46		
	13		1.80	23	A	—3	543	81	43		45
2– 9	17	T	2.20	51	C	—45	443	81	42	b	
	18		2.00	50	C	—44	469	77	42		
	18		1.80	51	C	—46	497	72	42		42
2–11	13	M	1.80	41	A	23	512	92	42	b	
	13		1.66	41	A	24	539	87	47		
	13		1.50	40	A	24	564	81	44		44
2–12	13	M	2.00	45	A	36	480	108	46	c	
	13		1.80	43	A	29	510	96	45		
	13		1.50	40	A	23	560	80	42		44
2–13	13	M	2.00	37	A	16	494	96	52	c	
	13		1.80	34	A	11	531	87	53		
	13		1.50	33	A	8	576	74	46		
	16	Ty	2.50	22		11	457	91	48	b	
	17		2.00	18		9	533	76	53		
	17		1.80	17		8	562	71	51		50
			Long method						51		
2–14	13	M	1.80	43	A	29	510	96	39	d	
	13		1.61	41	A	32	543	90	39		
	13		1.49	38	A	31	562	85	35		
	20	Ty	1.44	46		30	564	73	47	c	
	20		1.45	41		28	563	74	43		
	21		1.50	49		33	550	76	48		44

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
2–15	12	M	2.48	46	B	45	413	132	48	d	
	13		2.00	42	A	36	482	109	40		
	13		1.49	39	A	21	566	78	40		43
			Long method						20		
2–16	13	M	2.01	39	A	29	487	105	46	d	
	13		1.80	39	A	30	516	98	42		
	13		1.60	40	A	26	558	82	34		
	17	T	2.20	34	B	—86	463	84	42	b	
	17		2.00	34	8	—81	487	82	42		
	18		1.80	38	B	—88	511	77	42		
	16	Ty	2.50	34		38	392	132	15	p	
	17		2:00	34		38	467	113	29		42
			Long method						28		
2–17	13	M	2.00	52	B	43	470	110	46	d	
	13		1.80	51	B	44	499	103	47		
	13		1.50	47	B	40	548	88	36		
	17	T	2.50	13	A	—15	463	97	39	d	
	17		2.20	15	A	—12	502	92	53		
	17		2.00	14	A	—13	525	87	49		
	16	Ty	2.50	22		17	445	103	34	d	
	16		2.21	23		18	482	95	37		
	17		2.00	24		20	505	91	34		42
			Long method						46		
2–18	13	M	2.00	44	A	31	479	105	41	c	
	13		1.79	44	A	27	508	95	38		
	13		1.49	43	A	25	562	79	42		
	17	T	2.00	12	A	—17	529	85	44	c	
	18		1.80	12	A	—18	556	80	43		
	16	Ty	2.50	12		10	484	98	47	b	
	16		2.20	12		7	522	89	47		
	17		2.00	12		8	545	82	47		44
			Long method						42		
2–19	12	M	2.20	47	B	33	447	110	40	b	
	13		2.00	46	B	33	477	103	41		
	13		1.81	48	B	33	505	95	46		
	16	Ty	2.49	10		9	489	99	50	b	
	17		2.00	9		9	556	87	52		
	17		1.79	8		9	581	82	50		46
			Long method						42		
2–20	13	M	2.00	34	A	13	498	95	49	c	
	13		1.80	32	A	6	532	85	47		
	13		1.50	30	A	7	583	74	51		49
2–21	13	M	2.00	45	B	54	469	123	40	a	
	13		1.80	49	B	55	495	113	43		
	14		1.50	45	B	51	544	96	32		38
2–22	13	M	2.00	38	A	39	489	113	44	d	
	13		1.81	37	A	36	515	103	44		
	14		1.49	31	A	21	579	81	49		46
2–24	16	Ty	2.49	28		24	434	109	38	c	
	16		2.00	27		23	502	93	41		
	17		1.80	26		22	530	86	40		40
2–25	13	M	2.00	50	8	37	464	105	30	p	
	14		1.50	48	B	29	547	79	35		
2–27	16	T	2.50	81	D	17	383	92	46	c	
	17		2.20	83	D	21	422	89	51		
	17		2.00	80	D	18	448	83	45		
	16	Ty	2.51	37		16	435	83	64	c	
	16		2.00	40		18	500	72	60		
	17		1.80	41		19	527	68	63		53
			Long method						51		
2–28	13	M	1.80	59	B	28	496	87	37	c	
	13		1.64	52	B	24	525	81	39		
	14		1.50	52	B	27	549	76	39		
	18	Ty	1.46	32		14	586	60	49	b	
	18		1.44	32		13	592	59	51		
	18		1.41	33		14	596	59	52		47
2–29	17	T	2.20	29	8	—72	476	89	58	d	
	17		2.00	30	B	—74	500	84	55		
	16	Ty	2.50	22		7	461	83	49	c	
	16		2.00	24		10	522	73	51		
	17		1.80	26		12	546	70	54		53
3– 2	17	T	1.77	13	A	—12	549	83	39	c	
	18		1.70	13	A	—10	554	83	41		
	18		1.64	10	A	—14	577	80	37		
	16	Ty	2.51	6		7	486	98	37	b	
	16		2.00	6		7	560	85	42		
	17		1.50	8		7	618	72	43		40
			Long method						62		
1940—Continued											
3– 3	13	M	1.80	71	B	79	473	124	52	d	
	13		1.64	71	B	77	501	113	51		
	14		1.50	69	B	72	520	102	37		
	16	Ty	2.49	38		32	414	38	49	b	
	16		2.00	39		32	479	39	48		
	17		1.50	37		26	559	37	45		47
			Long method						69		
3– 4	13	M	2.00	55	8	52	466	116	46	c	
	13		1.80	49	8	45	497	105	44		
	14		1.50	55	B	47	540	90	40		
	17	T	2.20	16	A	8	486	114	47	c	
	17		2.00	14	A	5	514	106	43		
	17		1.80	14	A	3	543	99	43		
	16	Ty	2.50	35		35	389	128	18	p	
	16		2.00	33		33	466	107	30		
	17		1.80	33		33	492	100	30		44
3– 5	13	M	1.99	71	8	83	437	137	48	c	
	13		1.80	70	B	90	467	133	49		
	14		1.49	69	8	97	519	118	50		
	16	T	2.50	19	A	2	448	113	53	c	
	17		2.20	16	A	2	487	107	48		
	17		2.00	14	A	1	516	102	48		
	16	Ty	2.49	26		31	425	126	44	b	
	16		2.00	26		28	492	103	41		
	17		1.50	31		25	568	79	47		47
			Long method						52		
3– 6	13	M	2.00	69	B	95	443	150	59	d	
	13		1.81	69	B	95	463	139	50		
	14		1.40	72	B	102	513	121	48		
	16	T	2.50	36	B	—42	414	110	52	b	
	17		2.20	37	B	—44	453	101	48		
	17		2.00	36	8	—45	481	96	46		
	20	Ty	1.32	17		14	623	69	45	c	
	21		1.34	17		15	619	70	46		
	22		1.37	19		16	609	72	45		48
3– 7	13	M	1.57	74	B	119	492	139	46	d	
	14		1.50	76	8	119	501	133	40		
	14		1.41	73	B	115	529	124	50		
	16	T	2.50	49	C	—29	405	97	48	c	
	17		2.20	50	C	—24	436	94	42		
	17		1.98	52	C	—22	465	91	48		
	16	Ty	2.50	29		25	433	110	57	c	
	16		2.00	32		26	494	95	54		
	17		1.50	37		26	564	76	52		49
			Long method						43		
3– 8	13	M	1.80	87	C	179	437	175	52	c	
	13		1.66	87	C	168	466	159	44		
	14		1.50	82	C	170	496	145	46		47
3– 9	13	M	2.01	49	B	48	471	116	50	p	
	13		1.80	48	B	44	503	104	47		
	14		1.50	50	B	50	536	94	30		
3–10	12	M	2.51	66	8	73	377	152	48	c	
	13		2.00	68	8	74	450	128	48		
	14		1.50	61	B	71	530	104	42		46
			Long method						32		
3–11	13	M	2.00	48	B	47	475	115	49	c	
	13		1.80	46	B	42	503	103	41		
	14		1.50	43	B	33	559	85	46		45
3–12	13	M	2.00	42	A	41	482	113	42	b	
	13		1.80	41	A	40	506	104	35		
	14		1.50	42	A	38	556	89	39		
	16	T	2.50	11	A	—5	460	111	50	c	
	16		2.20	13	A	—5	497	101	54		
	17		2.00	13	A	—3	526	98	57		
	15	Ty	2.50	10		9	490	100	57	c	
	16		2.00	9		8	550	85	47		
	17		1.50	11		11	608	74	46		46
			Long method						53		
3–13	13	M	2.00	35	A	17	492	97	48	c	
	13		1.80	32	A	6	530	85	45		
	14		1.50	28	A	2	581	71	47		
	16	T	2.20	12	A	—1	498	107	54	d	
	17		2.00	12	A	—3	524	100	57		
	17		1.68	11	A	—8	573	86	51		
	15	Ty	2.51	4		19	500	127	62	c	
	16		2.00	4		17	561	105	54		
	17		1.50	3		14	626	85	50		52
			Long method						41		
1940—Continued											
3–14	13	M	1.99	46	B	53	470	121	43	c	
	13		1.80	47	B	47	495	107	36		
	14		1.50	45	B	45	547	92	35		
	15	Ty	2.50	12		9	476	93	45	b	
	16		2.00	11		9	540	84	52		
	17		1.50	13		12	611	80	51		46
			Long method						41		
3–15	13	M	1.80	21	A	8	545	89	46	b	
	13		1.63	23	A	9	568	82	43		
	14		1.50	20	A	6	596	76	48		
	18	Ty	1.28	20		27	611	83	44	c	
	18		1.26	22		28	610	85	44		
	18		1.24	24		30	611	84	43		45
3–16	13	M	2.00	22	A	14	511	101	40	b	
	13		1.80	21	A	13	539	93	37		
	14		1.50	18	A	9	590	78	36		
	15	Ty	2.50	24		20	435	105	47	b	
	16		2.00	24		21	501	94	39		
	17		1.50	27		27	567	85	44		40
			Long method						36		
3–17	13	M	2.00	59	8	89	436	148	32	c	
	13		1.80	56	B	87	469	136	27		
	13		1.50	59	8	84	523	114	32		
	17	Ty	1.37	35		25	584	72	47	p	
	18		1.33	38		29	589	74	51		
	18		1.30	40		30	591	73	48		30
3–18	13	M	2.00	64	8	62	442	122	27	c	
	13		1.80	64	B	64	471	115	30		
	14		1.50	66	B	65	519	98	30		29
3–19	13	M	2.00	60	B	64	446	126	31	d	
	13		1.81	57	B	61	474	115	28		
	14		1.50	58	B	65	530	101	36		32
3–20	13	M	2.00	65	8	71	436	129	30	c	
	13		1.80	67	B	71	464	119	29		
	14		1.50	62	B	66	520	101	29		
	16	Ty	1.99	83		75	419	134	57	d	
	16		1.80	87		77	449	126	60		
	17		1.50	84		70	503	105	54		38
3–21	16	T	2.20	30	8	8	442	119	40	c	
	17		2.00	31	B	—8	501	104	42		
	17		1.49	31	B	—14	546	92	39		
	15	Ty	2.49	48		41	392	122	40	d	
	16		2.00	38		35	470	106	37		
	17		1.50	31		29	559	85	42		40
			Long method						57		
3–22	13	M	1.80	64	D	63	476	114	39	d	
	13		1.64	65	D	63	500	105	31		
	14		1.50	63	D	61	522	97	31		
	16	T	2.50	37	B	—5	400	125	38	c	
	16		2.00	39	B	—6	458	110	34		
	17		1.50	45	B	—11	529	96	34		
			Long method						30		
	17	Ty	1.30	82		79	523	107	43	d	
	17		1.26	83		79	527	104	39		36
3–23	13	M	2.00	67	B	61	450	120	44	c	
	13		1.80	63	B	56	479	108	39		
	14		1.50	59	B	46	534	87	39		
	16	T	2.20	27	B	5	447	118	33	b	
	16		2.00	28	B	—14	475	105	34		
	17		1.80	28	B	—11	503	100	33		37
3–24	13	M	1.80	86	C	91	451	130	42	d	
	13		1.63	87	C	91	480	120	37		
	14		1.50	83	C	92	499	110	32		
	15	Ty	2.50	42		53	374	157	29	p	
	16		2.01	43		54	444	135	43		
	17		1.50	49		59	510	114	34		37
			Long method						41		
3–25	13	M	2.00	54	B	35	468	102	40	b	
	13		1.80	54	B	30	493	96	36		
	14		1.50	56	B	36	541	82	39		
	15	Ty	2.50	60		64	356	159	44	b	
	16		2.01	61		63	425	134	39		
	17		1.50	61		63	508	111	44		40
			Long method						62		
3–26	18	Ty	1.23	63		67	543	102	29	p	
	18		1.21	66		69	548	101	32		
	18		1.19	66		68	552	99	32		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
3–27	13	M	1.80	61	B	38	492	94	43	d	
	13		1.62	55	B	31	522	83	40		
	14		1.50	59	B	37	542	81	41		41
3–29	15	Ty	2.50	59		52	389	130	69	c	
	16		2.00	54		47	461	111	60		
	17		1.50	53		46	536	93	55		61
			Long method						52		
3–30	13	M	2.00	76	C	72	435	128	39	c	
	13		1.80	76	C	69	471	116	43		
	14		1.50	73	C	64	521	96	34		
	15	Ty	2.50	31		17	433	92	41	c	
	15		2.20	32		18	470	86	47		
	16		2.01	29		16	500	80	41		41
3–31	13	M	2.00	65	B	40	466	101	55	d	
	13		1.81	59	B	35	494	92	49		
	14		1.50	57	B	32	545	78	48		51
4– 3	17	Ty	1.38	33		24	587	71	43	d	
	17		1.34	29		20	602	68	47		
	17		1.29	30		21	606	67	41		44
4– 8	13	M	1.80	73	B	29	489	82	42	d	
	14		1.64	76	C	—1	513	75	46		
	14		1.50	76	C	—5	538	68	44		44
4–10	13	M	2.00	67	B	26	469	88	49	c	
	13		1.81	65	B	21	493	79	43		
	14		1.50	68	B	28	536	71	38		43
4–11	13	M	1.80	95	C	73	456	123	49	d	
	14		1.68	88	C	83	478	118	49		
	14		1.51	89	C	78	504	107	47		
	16	T	2.20	20	A	145	405	267	43	c	
	16		2.00	21	A	142	437	242	40		
	16		1.80	18	A	137	473	221	40		
	15	Ty	2.50	6		38	455	167	31	d	
	15		2.00	7		35	526	135	41		
	16		1.50	8		37	592	115	49		42
4–12	13	M	2.01	122	C	102	404	155	56	p	
	13		1.81	121	C	107	430	145	53		
	14		1.51	114	C	82	485	113	38		
	16	T	1.68	29	8	144	503	146	34	c	
	17		1.55	29	B	130	519	136	33		
	17		1.50	29	B	127	528	133	33		
	15	Ty	2.49	30		114	365	303	45	d	
	15		2.00	28		112	438	254	42		
	16		1.50	29		89	531	174	44		38
4–13	13	M	2.01	81	C	27	445	104	43	c	
	13		1.81	79	C	27	477	96	46		
	14		1.51	79	C	21	525	80	44		
	15	T	2.50	37	B	93	381	166	40	c	
	16		2.00	39	B	87	450	143	45		
	17		1.50	41	B	75	524	120	42		
			Long method						47		
	15	Ty	2.50	24		66	390	208	44	c	
	15		2.00	23		62	467	169	44		
	16		1.50	21		60	553	137	47		44
4–14	13	M	2.00	95	C	43	429	116	43	p	
	13		1.81	87	C	40	462	105	39		
	14		1.51	83	C	24	512	82	31		38
4–15	15	Ty	2.50	67		116	290	263	26	p	
	15		2.21	64		115	333	241	15		
	15		2.00	70		118	365	224	28		
4–16	13	M	2.20	31	A	—14	481	80	46	p	
	13		2.01	30	A	—19	515	72	53		
	13		1.80	29	A	—27	542	63	29		
	16	T	2.20	42	B	59	418	141	48	c	
	16		2.00	40	B	51	449	131	40		
	16		1.80	42	B	48	482	124	51		45
4–17	13	M	2.50	29	A	—8	449	92	43	c	
	13		2.01	28	A	—11	516	79	47		
	14		1.50	24	A	—20	596	59	47		46
			Long method						50		
4–18	13	M	2.20	42	A	4	466	90	55	c	
	13		2.00	41	A	1	495	82	55		
	13		1.81	39	A	—3	518	76	45		
	16	T	1.67	45	B	—70	514	80	47	c	
	16		1.60	44	B	—71	527	79	48		
	17		1.53	46	C	—22	534	79	44		
	15	Ty	2.50	37		57	394	172	57	d	
	15		2.00	39		57	461	144	57		
	16		1.50	43		62	530	124	50		50
			Long method						56		
1940—Continued											
4–19	13	M	2.20	63	B	37	434	106	42	c	
	13		2.00	59	B	35	465	99	45		
	14		1.81	61	B	36	493	92	50		46
4–20	13	M	2.01	46	B	8	490	80	49	c	
	14		1.81	46	B	6	516	74	44		
	14		1.51	44	A	—5	562	62	45		46
4–21	13	M	2.00	46	B	3	496	76	51	c	
	14		1.81	48	B	4	522	71	54		
	14		1.51	44	A	—9	571	59	59		
	15	Ty	1.80	99		76	438	116	54	p	
	17		1.26	86		63	544	86	40		
	17		1.20	83		64	548	82	39		55
4–22	13	M	2.00	28	A	—33	530	62	58	c	
	14		1.80	26	A	—38	564	56	60		
	19	Ty	1.16	64		57	565	88	31	p	
	19		1.14	68		60	566	88	30		
	19		1.13	65		57	569	87	27		59
4–23	13	M	2.20	23	A	—33	514	67	60	c	
	13		2.01	21	A	—34	535	64	52		
	14		1.81	21	A	—35	567	60	56		56
4–24	16	T	1.78	58	C	117	444	163	52	c	
	16		1.68	57	C	108	461	153	43		
	16		1.59	58	C	108	473	147	39		45
4–25	14	M	1.66	41	A	—1	543	70	47	d	
	14		1.51	43	A	13	566	73	56		
	15		1.44	38	A	3	580	66	48		
	15	Ty	2.50	75		94	309	230	32	d	
	15		2.00	68		106	389	206	42		
	16		1.50	59		105	474	173	40		45
			Long method						40		
4–26	13	M	2.20	35	A	—25	487	70	54	b	
	13		2.00	33	A	—24	519	67	57		
	14		1.80	35	A	—23	538	63	50		54
4–27	13	M	2.21	29	A	—26	498	72	59	b	
	13		2.01	28	A	—27	520	67	50		
	14		1.80	27	A	—26	551	64	49		53
4–28	14	Ty	2.50	29		36	412	131	47	b	
	15		2.00	30		40	477	122	47		
	16		1.50	32		35	551	96	44		46
			Long method						34		
4–29	14	Ty	2.51	71		59	371	135	69	c	
	15		2.00	70		58	443	116	67		
	16		1.50	67		54	523	96	58		65
			Long method						59		
4–30	13	M	2.20	51	B	—2	473	73	59	d	
	13		2.00	44	A	—16	498	69	58		
	14		1.80	47	B	—6	526	64	53		
	14	Ty	2.50	54		36	396	106	51	b	
	15		2.00	53		35	463	92	52		
	16		1.50	52		36	537	79	51		53
			Long method						42		
5– 1	13	M	2.21	35	A	—7	483	83	56	c	
	13		2.00	33	A	—14	512	75	53		
	14		1.80	31	A	—16	542	70	58		
	15	T	2.21	32	B	40	425	132	22	p	
	16		2.01	29	B	40	453	125	18		
	15	Ty	1.75	57		55	477	113	36	d	
	16		1.57	59		55	503	104	35		
	16		1.49	60		56	519	100	42		49
5– 2	13	M	2.20	27	A	—20	499	77	49	d	
	13		2.00	26	A	—21	526	72	52		
	14		1.80	25	A	—23	558	68	60		
	18	T	1.22	39	B	—45	583	76	36	d	
	18		1.20	32	B	—46	593	73	36		
	18		1.18	29	B	—44	600	73	33		
	14	Ty	2.50	52		66	361	175	46	c	
	15		2.00	48		62	444	138	48		
	16		1.50	45		60	522	120	43		45
			Long method						28		
5– 3	13	M	2.01	30	A	—10	520	78	67	d	
	14		1.80	31	A	—9	543	74	58		
	14		1.50	32	A	—8	582	64	55		
	14	Ty	2.51	55		43	385	119	42	c	
	15		2.00	57		45	449	105	40		
	16		1.50	67		48	519	85	41		48
			Long method						32		
1940—Continued											
5– 4	14	M	1.80	10	A	—39	598	61	58	c	
	14		1.63	10	A	—33	618	57	52		
	14		1.51	9	A	—35	633	54	47		
	16	T	2.00	13	A	118	464	227	39	c	
	16		1.80	13	A	125	497	211	45		
	16		1.71	13	A	128	511	206	37		
	14	Ty	2.49	23		23	431	115	36	c	
	15		2.21	23		23	469	107	33		
	15		2.01	22		25	495	103	35		42
5– 5	13	M	2.00	29	A	—20	515	72	52	c	
	14		1.81	28	A	—20	542	67	48		
	14		1.70	29	A	—20	557	64	40		
	14	Ty	2.51	46		48	384	142	47	c	
	15		2.00	39		41	463	115	45		
	16		1.50	39		41	539	97	42		46
			Long method						64		
5– 6	13	M	2.01	53	B	33	462	99	33	c	
	14		1.80	54	B	33	499	93	45		
	15		1.51	52	B	27	542	76	32		
	15	T	2.20	50	C	58	412	146	54	c	
	16		2.00	51	C	71	437	147	58		
	16		1.80	52	C	59	468	133	55		
	23	Ty	1.72	69		99	440	172	51	p	
	23		1.80	68		111	412	199	43		
	23		2.00	71		119	372	225	45		46
5– 7	14	T	2.21	36	B	168	404	183	42	c	
	14		2.00	38	B	170	432	173	38		
	15		1.79	39	B	157	462	156	37		
	14	Ty	2.50	49		47	391	134	52	b	
	15		2.00	47		45	460	114	47		
	16		1.50	45		40	540	92	44		45
			Long method						41		
5– 8	13	M	2.20	43	A	5	467	91	56	p	
	13		2.00	40	A	1	501	83	57		
	14		1.80	40	A	3	527	75	53		
	15	T	2.20	55	C	141	345	207	07	p	
	15		2.00	55	C	151	377	196	15		
	16		1.80	53	C	150	415	181	23		
	14	Ty	2.51	44		78	366	210	61	c	
	15		2.01	43		78	437	177	56		
	16		1.50	49		86	504	153	52		56
			Long method						41		
5– 9	13	M	2.01	32	A	—25	517	69	54	c	
	14		1.80	30	A	—25	547	64	52		
	15		1.50	30	A	—23	592	55	53		
	15	T	2.50	58	C	178	296	254	20	d	
	16		2.00	58	C	180	369	214	22		
	17		1.50	60	C	184	460	174	36		44
			Long method						48		
5–10	13	M	2.20	30	A	—16	492	80	54	c	
	13		2.01	31	A	—15	514	75	55		
	14		1.80	29	A	—17	542	71	48		
	15	T	2.20	51	C	147	363	207	31	d	
	15		2.00	52	C	153	391	197	30		
	16		1.80	51	C	152	423	182	33		45
5–11	14	M	1.80	17	A	—36	569	64	49	d	
	14		1.66	17	A	—25	593	62	56		
	15		1.50	16	A	—31	614	54	47		
	15	Ty	2.01	81		115	373	209	55	p	
	15		1.80	78		115	404	197	49		
	16		1.50	79		113	458	168	47		51
5–12	13	M	2.20	23	A	—23	505	75	49	c	
	13		2.01	23	A	—25	531	70	51		
	14		1.81	21	A	—27	558	65	45		
	14	Ty	2.51	71		122	293	271	46	c	
	15		2.00	72		122	370	230	44		
	16		1.50	73		121	457	186	46		47
			Long method						27		
5–13	13	M	2.20	21	A	—25	509	74	50	c	
	13		2.01	21	A	—27	538	68	54		
	14		1.80	20	A	—29	563	64	51		52
5–14	15	T	2.20	58	C	119	362	188	35	c	
	15		2.00	59	C	110	403	172	37		
	16		1.80	60	C	118	428	165	42		38
5–15	13	M	2.20	46	B	9	472	85	55	d	
	13		2.00	48	B	10	490	81	51		
	14		1.81	46	B	5	513	73	40		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
5–15	15	T	2.20	25	A	47	434	149	35	d	
	15		2.00	28	B	90	463	142	40		
	16		1.80	33	B	78	491	132	48		45
5–16	14	M	2.00	27	A	—13	511	77	40	d	
	14		1.80	27	A	—17	539	71	40		
	15		1.50	26	A	—20	598	59	52		
	15	T	2.20	32	B	231	416	207	64	p	
	15		2.00	31	B	230	441	193	58		
	16		1.80	36	B	218	468	177	61		44
5–17	13	M	2.20	33	A	—10	478	82	42	d	
	14		2.00	30	A	—17	506	74	40		
	14		1.80	31	A	—18	539	69	43		42
5–19	13	M	2.20	33	A	—18	488	74	50	d	
	14		2.00	33	A	—22	520	68	60		
	14		1.80	33	A	—23	544	64	51		54
5–20	13	M	2.50	38	A	—2	433	92	54	c	
	14		2.00	34	A	—14	502	74	49		
	15		1.50	31	A	—12	580	61	44		49
			Long method						59		
5–21	13	M	2.20	31	A	2	479	93	44	c	
	14		2.00	28	A	—3	508	85	45		
	14		1.80	25	A	—9	546	77	52		47
5–23	13	M	2.20	29	A	—26	497	71	51	c	
	14		2.00	28	A	—25	525	67	54		
	14		1.80	29	A	—24	552	63	55		
	15	T	2.21	84	D	156	311	268	45	d	
	15		2.00	82	D	156	349	246	47		
	16		1.80	82	D	156	385	227	54		51
		Ty	Long method						61		
5–24	13	M	2.21	30	A	—19	490	75	50	b	
	14		2.00	29	A	—24	517	69	49		
	14		1.80	30	A	—25	546	64	51		
	15	T	2.20	87	D	155	307	263	39	d	
	15		2.00	89	D	155	339	242	36		
	16		1.80	91	D	157	374	225	44		48
		Ty	Long method						52		
5–25	13	M	2.20	36	A	—6	479	84	51	d	
	14		2.00	35	A	—7	501	78	46		
	14		1.80	32	A	—20	542	67	47		
	15	T	2.20	15	A	24	477	132	52	b	
	15		2.00	15	A	29	505	130	54		
	16		1.80	16	A	30	530	124	48		50
5–26	13	M	2.20	10	A	—39	544	68	50	b	
	14		2.01	9	A	—39	565	65	47		
	14		1.80	9	A	—42	598	60	51		49
5–27	13	M	2.20	9	A	—43	547	65	45	c	
	14		2.00	9	A	—44	573	61	52		
	14		1.80	8	A	—48	603	55	52		
	14	Ty	2.50	89		146	282	295	94	p	
	15		2.00	81		130	371	235	68		
	16		1.50	84		126	464	182	79		50
5–28	15	T	2.20	19	A	177	405	303	64	p	
	15		2.00	20	A	146	447	247	65		
	16		1.80	20	A	134	483	217	62		64
5–29	13	M	2.20	19	A	—34	521	69	60	c	
	14		2.00	19	A	—36	543	64	51		
	14		1.80	21	A	—36	569	59	54		55
5–30	13	M	2.20	23	A	—28	516	71	61	c	
	14		1.99	21	A	—28	538	67	55		
	14		1.80	21	A	—20	568	63	57		
	15	T	2.21	27	B	—4	456	115	49	B	
	15		2.00	28	B	—3	481	109	50		
	16		1.80	26	B	—8	511	101	49		
	14	Ty	2.50	43		54	394	157	58	c	
	15		2.00	44		53	464	133	57		
	16		1.50	46		53	537	108	57		53
5–31	13	M	2.20	13	A	—33	531	71	49	c	
	14		2.00	13	A	—34	555	66	50		
	14		1.80	13	A	—38	584	61	49		
	15	T	2.50	13	A	20	452	138	52	c	
	15		2.00	12	A	13	513	116	42		
	16		1.50	13	A	10	575	98	50		
			Long method						31		
	14	Ty	2.50	45		58	390	165	63	d	
	15		2.00	41		56	459	141	59		
	16		1.50	43		55	536	113	54		50
			Long method						47		
1940—Continued											
6– 1	13	M	2.20	13	A	—31	529	72	39	p	
	14		2.00	13	A	—33	563	67	57		
	14		1.80	13	A	—34	585	63	51		
	15	T	2.21	57	C	—9	420	105	29	c	
	15		2.00	56	C	—12	448	98	33		
	16		1.80	56	C	—13	477	94	36		
	21	Ty	1.10	52		44	603	78	43	c	
	21		1.12	61		51	589	83	41		
	21		1.14	61		54	584	85	43		38
6– 2	13	M	2.20	1	A	—22	519	80	51	c	
	14		2.00	15	A	—20	545	76	54		
	14		1.80	15	A	—23	566	71	41		48
6– 3	13	M	2.21	18	A	—12	509	86	48	b	
	14		2.01	18	A	—13	535	81	48		
	14		1.80	18	A	—15	559	75	42		
	15	T	2.20	24	A	62	429	167	38	d	
	16		1.81	36	B	134	468	150	45		
	16		1.50	46	C	96	508	137	53		46
6– 4	13	M	2.20	25	A	—10	500	85	54	b	
	14		2.00	23	A	—13	523	78	49		
	14		1.80	23	A	—15	556	73	52		
	14	Ty	2.21	51		64	421	155	67	d	
	15		2.00	46		59	457	141	63		
	15		1.80	44		57	488	130	59		54
6– 5	13	M	2.20	34	A	—4	477	86	47	b	
	14		2.00	33	A	—5	507	82	52		
	14		1.80	34	A	—8	536	74	51		
	15	T	2.20	61	C	190	352	238	61	p	
	15		2.01	62	C	192	381	223	63		
	16		1.80	60	C	185	423	201	61		50
		Ty	Long method						32		
6– 6	13	M	2.50	42	A	4	428	90	52	c	
	14		2.01	42	A	5	488	77	45		
	15		1.50	44	A	1	558	65	43		
			Long method						25		
	15	T	2.20	62	C	158	358	216	51	c	
	15		2.00	64	C	170	383	209	55		
	16		1.80	60	C	177	420	197	54		49
6– 7	13	M	2.20	68	B	46	417	112	30	p	
	14		2.00	72	B	53	449	109	44		
	14		1.80	75	B	53	482	102	48		41
6– 8	14	M	2.21	30	A	—9	488	84	50	d	
	14		2.01	29	A	—6	515	83	52		
	14		1.80	30	A	3	542	83	48		50
6– 9	14	M	2.20	25	A	—24	503	73	57	c	
	14		2.00	24	A	—29	532	66	53		
	14		1.80	23	A	—33	562	61	50		53
		Ty	Long method						54		
6–10	14	M	2.20	6	A	—36	556	71	49	c	
	14		1.80	7	A	—35	606	65	51		
	15		1.67	5	A	—34	621	61	50		50
		Ty	Long method						50		
6–11	14	M	2.20	12	A	—14	525	87	43	c	
	14		2.01	12	A	—21	552	77	46		
	14		1.80	12	A	—24	581	71	51		47
6–13		T	Long method						42		
6–14	14	M	2.20	9	A	—39	541	69	40	c	
	14		2.00	9	A	—39	571	65	44		
	14		1.80	9	A	—40	594	61	48		44
6–15	14	M	2.20	13	A	—34	530	70	48	b	
	14		2.00	13	A	—36	555	65	48		
	14		1.80	13	A	—43	586	57	47		
	14	T	2.21	38	B	128	405	167	37	d	
	15		1.80	40	B	97	466	140	39		
	15		1.70	39	B	95	481	135	34		45
6–16	14	M	2.20	10	A	—36	542	70	48	b	
	14		2.00	10	A	—38	570	65	53		
	14		1.80	9	A	—39	599	62	55		
	16	T	1.50	19	A	40	564	119	51	c	
	16		1.42	21	A	34	576	111	46		
	17		1.38	19	A	32	586	109	48		50
6–17	14	M	2.20	40	A	—9	478	80	56	d	
	14		2.00	45	A	—7	496	75	55		
	15		1.80	39	A	—13	534	68	56		
	15	T	2.20	53	C	84	375	164	19	p	
	16		1.80	59	C	80	432	145	25		
	16		1.50	61	C	96	475	139	26		56
1940—Continued											
6–18	14	M	2.20	74	B	7	451	71	54	d	
	14		2.00	69	B	2	483	65	50		
	14		1.80	60	B	3	512	62	50		51
6–19	14	M	2.20	25	A	—27	498	71	45	c	
	14		2.00	26	A	—23	518	70	46		
	14		1.80	25	A	—27	551	64	46		46
6–20	15	T	2.20	28	B	0	446	116	39	c	
	15		2.00	27	B	—7	472	108	37		
	16		1.80	33	B	—12	497	101	38		38
6–21	14	M	2.20	41	A	—19	487	70	70	c	
	14		2.00	41	A	—19	507	66	66		
	14		1.80	41	A	—23	536	61	63		
	15	T	2.20	43	B	49	412	138	39	c	
	15		2.00	44	B	50	440	132	40		
	16		1.80	52	C	62	455	135	39		52
6–22	14	M	2.20	34	A	—27	494	67	58	c	
	14		2.00	33	A	—28	516	64	59		
	14		1.80	30	A	—31	546	60	53		57
		T	Long method						55		
6–23	16	T	1.80	35	B	—41	500	92	42	c	
	16		1.67	34	B	—39	518	88	37		
	16		1.50	37	B	—19	532	91	35		38
6–24	15	T	2.00	66	C	152	372	199	29	d	
	16		1.80	65	C	141	416	179	39		
	16		1.50	63	C	147	463	159	28		32
6–25	15	T	2.20	22	A	43	453	147	49	c	
	15		2.00	21	A	41	483	135	48		
	16		1.80	19	A	32	515	125	46		48
6–26	14	M	2.51	33	A	—27	452	75	56	c	
	15		2.00	29	A	—30	517	65	50		
	16		1.50	25	A	—22	594	58	51		
			Long method						32		
	15	T	2.20	16	A	30	470	137	49	b	
	15		2.00	19	A	32	488	130	47		
	16		1.80	19	A	27	516	119	45		49
6–27	14	M	2.19	23	A	—28	510	71	52	c	
	14		2.00	22	A	—27	530	69	52		
	14		1.80	28	A	—21	546	67	55		
	16	T	1.80	56	C	193	404	205	35	p	
	16		1.65	56	C	201	434	194	40		
	17		1.37	60	C	190	482	166	51		53
6–28	14	M	2.20	13	A	—34	522	70	43	c	
	14		2.01	13	A	—36	552	66	46		
	14		1.80	12	A	—39	591	61	57		49
6–29	14	M	2.20	9	A	—34	543	72	49	d	
	14		2.00	9	A	—37	570	66	49		
	14		1.80	8	A	—40	604	61	54		51
6–30	14	M	2.20	9	A	—37	547	70	46	c	
	14		1.99	9	A	—39	572	65	47		
	14		1.80	8	A	—40	603	61	54		49
7– 1	14	M	2.20	9	A	—39	538	69	44	c	
	14		2.00	7	A	—40	576	65	55		
	14		1.80	9	A	—40	594	61	47		
	15	T	2.19	58	C	20	411	123	42	c	
	15		1.99	55	C	20	440	116	42		47
7– 2	14	M	2.20	9	A	—39	547	68	46	c	
	14		2.00	8	A	—40	572	64	46		
	14		1.80	8	A	—40	599	61	47		
	15	T	2.20	56	C	56	391	146	38	c	
	15		2.00	53	C	45	428	131	39		
	16		1.50	56	C	48	500	114	39		
	15	Ty	2.00	132		115	351	173	51	d	
	15		1.80	133		114	391	159	59		
	16		1.50	129		104	451	132	57		43
7– 3	13	M	2.50	7	A	—35	519	77	52	c	
	14		2.00	5	A	—38	595	66	60		
	15		1.50	3	A	—37	656	54	52		55
			Long method						41		
7– 4	14	M	2.00	3	A	—39	594	66	51	d	
	14		1.80	2	A	—42	630	62	60		
	15	T	2.20	21	A	—9	477	91	49	c	
	15		2.00	24	A	—4	495	90	51		
	16		1.80	27	B	—54	516	86	50		52
7– 5	14	M	2.20	11	A	—14	534	87	52	c	
	14		2.00	11	A	—19	563	78	58		
	14		1.80	11	A	—20	581	73	49		53
		Ty	Long method						46		

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued										
7- 6	14	M	2.20	10	A −17	539	85	51	c	
	14		2.00	10	A −21	566	77	57		
	14		1.80	9	A −24	590	72	51		53
7- 7	14	M	2.20	16	A 7	511	103	50	c	
	14		2.00	17	A 10	535	100	57		
	14		1.80	17	A 9	563	92	55		
	15	T	2.20	78	D 22	402	93	40	c	
	15		2.00	80	D 21	433	87	45		
	16		1.80	80	D 22	463	83	49		
	17	Ty	1.40	134	126	445	143	46	d	
	17		1.34	140	126	456	139	52		
	18		1.28	138	119	468	132	45		50
7- 8	14	M	2.19	30	A 8	486	98	52	c	
	14		2.00	29	A 3	509	90	53		
	14		1.79	22	A 3	541	82	54		53
7- 9	14	M	2.20	36	A 5	476	93	49	c	
	14		1.99	36	A 0	507	84	56		
	14		1.80	36	A −3	531	77	52		
	15	T	1.98	106	D 51	393	109	28	d	
	16		1.72	112	D 53	432	101	40		
	16		1.65	110	D 53	444	100	32		48
7-10	15	T	2.50	51	C 6	381	123	48	c	
	16		2.00	51	C 6	449	108	52		
	16		1.50	47	C 11	524	96	49		50
			Long method					35		
7-11	15	T	2.20	25	A 1	466	99	48	b	
	15		2.00	23	A −1	494	93	48		
	16		1.80	25	A 0	520	88	46		47
7-12	15	T	2.20	54	C −19	419	98	40	b	
	15		2.00	54	C −20	448	92	39		
	16		1.80	54	C −20	476	87	43		41
7-13	14	M	2.20	64	B 12	455	81	53	d	
	14		2.00	61	B 6	484	72	52		
	14		1.80	63	B 4	513	65	48		51
7-14	14	M	2.19	63	B 1	465	71	55	d	
	14		2.00	60	B 1	492	68	60		58
7-15	14	M	2.20	54	B 0	474	74	61	c	
	14		2.00	53	B −2	493	68	50		
	14		1.79	53	B −3	523	63	57		56
7-16	14	M	2.19	30	A −2	490	90	57	d	
	14		2.00	28	A −4	516	84	53		
	14		1.80	24	A −18	556	71	52		54
7-17	13	M	2.50	25	A −28	443	76	21	p	
	14		1.99	24	A −36	526	62	29		
	15		1.50	27	A −31	591	51	37		
			Long method					34		
	18	T	1.21	26	B −64	611	68	48	c	
	18		1.17	24	A −8	616	66	40		
	18		1.15	24	A −12	620	63	38		42
7-19	13	M	2.20	26	A −34	512	65	59	p	
	14		2.00	26	A −34	529	62	46		
	14		1.80	27	A −34	549	59	42		
	15	T	2.20	19	A −6	477	96	49	b	
	16		1.99	19	A −8	502	89	43		
	16		1.80	20	A −8	527	83	42		45
7-20	15	T	2.20	22	A −14	475	85	49	b	
	16		2.00	21	A −17	500	78	44		
	16		1.79	21	A −18	533	73	49		47
7-21	13	M	2.20	29	A −30	506	68	68	p	
	14		2.00	31	A −26	537	66	79		
	14		1.80	31	A −29	554	61	62		
	15	T	2.20	14	A −15	497	89	46	b	
	16		1.99	16	A −12	519	87	49		
	16		1.80	18	A −10	542	82	49		48
7-22	13	M	2.20	36	A −25	500	68	66	p	
	14		1.80	34	A −30	548	59	56		
	15	T	2.49	43	B −83	406	95	39	d	
	16		2.00	41	B −85	476	83	48		
	17		1.50	49	C −32	537	73	48		45
			Long method					42		
7-23	13	M	2.20	27	A −28	506	71	55	d	
	14		2.00	28	A −24	528	69	58		
	14		1.80	29	A −28	561	62	64		59
7-26	15	T	2.20	30	B −71	461	90	46	c	
	16		2.00	29	B −69	481	86	42		
	16		1.80	29	B −77	517	78	47		45
7-27	15	T	2.19	54	C −27	426	93	43	c	
	16		2.00	57	C −19	445	94	44		
	16		1.80	58	C −11	473	93	49		45
1940—Continued										
7-28	14	M	2.00	31	A −26	519	66	56	d	
	14		1.77	30	A −26	553	62	46		
	14		1.67	31	A −22	563	60	45		
	15	T	2.20	72	C −57	420	77	41	b	
	16		2.00	74	C −58	451	72	49		
	16		1.80	69	C −55	479	69	44		46
7-29	13	M	2.20	20	A −33	512	69	49	c	
	14		2.00	21	A −36	537	62	48		
	14		1.79	21	A −34	571	61	54		
	15	T	2.50	54	C −45	395	87	45	b	
	16		2.00	49	C −40	463	79	44		
	17		1.50	52	C −39	533	71	44		46
			Long method					36		
7-30	13	M	2.20	13	A −38	541	67	55	c	
	14		1.99	13	A −40	561	62	45		
	14		1.79	13	A −39	593	60	51		
	15	T	2.19	29	B −94	469	81	46	a	
	16		2.00	29	B −91	490	78	45		
	16		1.80	29	B −97	518	72	45		46
7-31	13	M	2.20	9	A −44	553	64	52	c	
	14		1.99	7	A −45	580	61	48		
	14		1.79	7	A −48	609	56	48		
	15	T	2.20	29	B −91	468	82	49	b	
	16		1.99	27	B −96	492	76	40		
	16		1.80	32	B −97	519	72	46		46
8- 1	15	T	2.20	47	C −47	440	79	44	b	
	16		2.00	50	C −46	465	76	45		
	16		1.80	53	C −48	494	71	51		47
8- 2	16	T	2.00	84	D 3	440	70	42	d	
	16		1.80	81	D 10	468	69	46		44
8- 3	15	T	2.20	88	D 8	412	72	49	c	
	16		1.99	84	D 7	439	68	45		
	16		1.80	86	D 8	470	64	45		46
8- 4	13	M	2.20	47	B 13	468	91	52	c	
	14		2.00	47	B 12	496	84	54		
	14		1.80	44	A −5	525	72	49		52
8- 5	13	M	2.49	13	A −39	503	72	54	c	
	14		1.99	12	A −44	564	60	47		
	15		1.50	11	A −42	637	49	52		51
			Long method					53		
8- 6	13	M	2.19	11	A −34	537	71	45	c	
	14		1.99	10	A −37	565	66	41		
	14		1.79	10	A −37	594	62	41		42
8- 7	13	M	2.19	11	A −36	548	70	58	c	
	14		1.99	11	A −36	569	66	56		
	14		1.79	11	A −36	598	62	58		
	15	T	2.19	157	D 129	293	188	38	p	
	16		2.00	160	D 133	320	180	39		
	16		1.80	162	D 133	357	167	43		57
8- 8	13	M	2.16	11	A −31	547	73	47	c	
	13		2.00	11	A −33	569	68	57		
	14		1.80	11	A −32	595	65	56		
	15	T	2.20	122	D 100	319	168	43	p	
	16		2.00	125	D 104	348	162	31		
	16		1.80	129	D 111	362	158	27		53
8- 9	16	T	2.00	180	D 137	306	175	33	p	
	16		1.80	182	D 139	336	164	29		
	17		1.50	192	D 149	386	152	33		
8-10	13	M	2.20	29	A −24	493	73	48	c	
	13		2.00	29	A −26	521	68	50		
	14		1.80	27	A −26	554	64	52		50
8-11	13	M	2.20	32	A −3	480	89	56	d	
	13		2.00	31	A −4	506	83	46		
	14		1.80	34	A −1	536	79	52		51
8-13	13	M	2.20	55	B 12	450	86	41	d	
	13		2.00	54	B 12	477	81	44		
	14		1.80	55	B 12	507	76	49		45
8-14	15	T	2.20	46	C −17	426	98	32	d	
	16		1.99	45	B −64	455	91	36		
	16		1.80	45	B −61	483	88	40		36
8-15	13	M	2.20	37	A −15	472	76	45	p	
	13		1.96	38	A −19	506	68	38		
	14		1.79	38	A −18	541	65	65		
	15	T	2.49	17	A −19	459	89	49	b	
	16		2.00	17	A −21	521	77	52		
	17		1.49	17	A −24	589	63	47		49
			Long method					34		
1940—Continued										
8-16	13	M	2.20	15	A −30	525	73	49	c	
	13		2.00	15	A −32	550	68	49		
	14		1.80	15	A −29	580	66	54		
	15	T	2.20	13	A −16	492	87	48	c	
	16		2.00	14	A −19	517	81	39		
	16		1.80	14	A −21	551	73	46		48
8-17	13	M	2.20	24	A −19	499	79	46	c	
	13		2.00	24	A −20	527	74	51		
	14		1.80	23	A −21	549	69	43		47
8-18	13	M	2.20	29	A 41	476	128	51	d	
	13		2.00	27	A 41	507	120	48		
	14		1.50	24	A 32	586	90	46		
	16	T	2.19	125	D 80	335	140	34	d	
	16		2.00	128	D 80	362	133	29		
	16		1.80	133	D 83	391	127	32		43
8-19	13	M	2.20	18	A 90	482	173	40	d	
	13		2.00	16	A 82	512	155	40		
	14		1.79	16	A 77	558	138	55		
	16	T	2.20	57	C −1	408	111	36	d	
	16		2.00	43	B −55	449	94	32		
	16		1.80	46	C −22	484	85	41		42
8-20	13	M	2.49	17	A 36	463	140	56	d	
	13		1.99	18	A 36	531	119	51		
	14		1.50	17	A 16	606	83	45		51
			Long method					38		
8-21	13	M	2.19	41	A −3	478	84	59	d	
	13		1.99	40	A −7	502	77	55		
	14		1.79	38	A −6	532	73	52		
	16	T	2.20	32	B −94	461	81	43	b	
	16		2.00	32	B −97	486	76	44		
	16		1.79	32	B −97	513	72	42		46
8-22	13	M	1.99	43	A 29	493	103	57	p	
	14		1.75	39	A 23	530	92	47		
8-23	13	M	2.20	57	B 12	453	84	52	c	
	13		2.00	53	B 11	484	80	52		
	14		1.80	57	B 12	515	74	54		53
8-27	15	Ty	2.49	80	76	332	161	32	d	
	15		2.00	78	72	413	134	41		
	15		1.50	75	68	497	107	42		38
8-28	15	Ty	2.50	108	99	292	186	40	c	
	15		2.00	106	98	374	157	44		
	16		1.50	103	98	457	130	43		42
8-29	13	M	2.00	62	B 18	473	83	47	c	
	13		1.80	60	B 14	500	75	44		
	14		1.50	65	B 22	550	68	49		47
		T	Long method					30		
8-30	13	M	2.49	24	A −33	476	73	49	d	
	13		1.99	15	A −41	551	61	42		
	14		1.50	19	A −41	618	48	50		47
			Long method					63		
9- 1	13	M	2.00	38	A −13	503	73	52	c	
	13		1.80	38	A −15	538	67	58		
	14		1.50	35	A −13	586	59	59		56
9- 3	13	M	1.79	46	B 4	527	72	52	c	
	14		1.65	47	B 7	548	69	46		
	14		1.50	47	B 9	568	65	46		
	16	T	2.20	18	A −20	495	81	56	b	
	16		2.00	20	A −20	516	76	51		
	16		1.80	21	A −20	540	71	54		52
9- 4	13	M	2.00	20	A −28	543	69	57	c	
	13		1.80	20	A −33	571	61	55		
	14		1.49	19	A −32	618	54	52		
	16	T	2.20	25	A 7	463	105	49	b	
	16		2.00	25	A 5	486	98	41		
	16		1.80	26	B −44	517	89	47		49
9- 5	13	M	2.20	22	A −35	520	66	52	c	
	13		2.00	20	A −35	542	64	51		
	13		1.80	20	A −37	577	59	53		
	16	T	2.19	94	D 16	404	77	42	c	
	16		2.00	95	D 16	433	73	46		
	16		1.80	96	D 14	460	66	45		48
9- 6	13	M	2.00	31	A −21	522	70	62	d	
	13		1.80	31	A −18	554	68	67		
	14		1.50	33	A −12	593	61	62		
	16	T	2.20	49	C −40	438	83	43	c	
	16		2.00	48	C −43	465	78	47		
	16		1.80	52	C −47	499	72	50		53

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
9– 7	12	M	2.48	24	A	−31	475	75	51	c	
	13		2.00	22	A	−31	542	66	60		
	14		1.50	21	A	−26	614	56	55		
			Long method						63		
	16	T	2.20	113	D	45	373	104	46	d	
	16		2.00	119	D	52	401	103	50		
	16		1.80	107	D	36	445	87	47		53
9– 9	16	T	2.20	80	D	8	417	74	46	c	
	16		2.00	71	C	−61	451	70	46		
	16		1.80	71	C	−64	477	65	44		
	16	Ty	2.49	145		95	272	180	35	d	
	16		2.00	143		92	354	150	38		
	17		1.50	150		97	436	128	45		43
9–10	16	T	2.21	64	C	−61	430	72	45	b	
	16		2.00	64	C	−61	459	69	46		
	16		1.80	65	C	−61	485	66	46		46
9–13	13	M	2.00	35	A	−16	514	72	60	d	
	13		1.80	35	A	−17	533	67	59		
	14		1.50	34	A	−17	590	58	61		
	16	T	2.51	36	B	−104	419	84	44	b	
	16		2.00	36	B	−110	484	73	41		
	17		1.50	38	B	−119	554	62	42		46
			Long method						39		
9–14	13	M	1.80	74	B	34	484	87	34	d	
	13		1.63	79	C	14	510	82	46		
	14		1.50	82	C	17	526	79	43		41
9–15	13	M	2.00	60	B	149	444	203	77	p	
	13		1.80	56	B	131	482	173	65		
	14		1.50	53	B	109	540	133	66		
	16	T	2.20	37	B	−89	457	84	52	b	
	16		2.00	38	B	−88	483	81	53		
	16		1.80	38	B	−94	510	75	51		52
9–16	13	M	2.00	35	A	30	493	107	49	c	
	13		1.80	38	A	30	526	98	56		
	14		1.50	41	A	29	573	83	59		
	16	T	2.21	45	B	−81	443	84	55	b	
	16		2.00	45	B	−81	470	80	57		
	16		1.80	48	C	−41	485	75	53		55
9–18	13	M	2.19	27	A	8	500	100	67	d	
	13		2.00	26	A	4	525	91	61		
	13		1.80	26	A	1	551	83	56		
	16	T	2.20	64	C	−47	427	82	45	c	
	16		2.00	68	C	−44	450	80	46		
	16		1.80	64	C	−32	473	81	42		48
9–19	13	M	2.20	24	A	−10	503	87	57	c	
	13		2.00	24	A	−12	528	80	54		
	13		1.80	23	A	−15	560	73	55		
	16	T	2.20	37	B	−8	443	115	55	c	
	16		2.00	38	B	−15	470	107	51		
	17		1.80	37	B	−16	499	100	56		55
9–20	12	M	2.49	39	A	−8	446	89	61	c	
	13		2.00	39	A	−5	504	79	55		
	14		1.50	42	A	−3	578	63	57		
			Long method						56		
	16	T	2.50	40	B	−24	405	118	58	p	
	16		2.00	45	B	−28	465	104	55		
	17		1.50	61	C	8	510	97	40		56
9–21	13	M	2.20	41	A	−1	470	86	56	c	
	13		2.00	40	A	−4	503	79	58		
	13		1.80	40	A	−3	530	75	58		57
9–23	13	M	2.00	35	A	−16	515	72	64	p	
	13		1.80	34	A	−18	539	67	50		
	14		1.50	30	A	−19	579	58	43		
	16	T	2.19	65	C	−17	417	100	42	p	
	16		2.00	67	C	−17	440	96	43		
	17		1.80	72	C	−10	459	96	40		
9–24	12	M	2.19	25	A	−10	497	86	49	c	
	13		2.00	25	A	−13	518	79	43		
	13		1.79	22	A	−16	553	73	51		
	16	T	2.21	84	D	54	373	130	35	p	
	16		2.00	82	D	53	413	123	46		
	17		1.80	91	D	57	434	118	49		48
		Ty	Long method						37		
9–25	13	M	2.00	26	A	19	513	103	51	c	
	13		1.80	24	A	15	547	94	52		
	14		1.50	26	A	21	583	83	46		
	16	T	2.20	34	B	−114	466	73	42	b	
	16		2.00	31	B	−112	493	71	47		
	17		1.80	32	B	−122	521	64	42		46
1940—Continued											
9–27	12	M	2.20	24	A	8	490	103	44	b	
	13		2.00	21	A	9	517	97	42		
	13		1.80	23	A	5	552	87	44		43
9–28	12	M	2.20	28	A	2	477	95	37	c	
	13		2.00	28	A	1	511	88	48		
	13		1.80	27	A	−2	538	80	42		42
9–29	13	M	2.00	28	A	3	513	90	50	c	
	13		1.80	27	A	4	540	85	47		
	13		1.50	31	A	10	583	76	51		
	16	T	2.20	20	A	−5	469	96	36	c	
	16		2.00	20	A	−7	498	89	38		
	17		1.80	21	A	−6	524	84	39		45
9–30	12	M	2.20	60	B	130	390	202	38	c	
	13		1.99	59	B	126	429	183	39		
	13		1.80	59	B	123	462	164	48		
	16	T	2.51	33	B	−59	412	102	34	b	
	16		2.00	30	B	−57	480	90	34		
	17		1.50	28	B	−36	546	84	34		37
			Long method						29		
10– 1	12	M	1.99	45	A	24	481	99	42	c	
	13		1.50	45	A	23	559	78	44		43
10– 2	16	T	2.20	41	B	−93	446	84	48	b	
	16		2.00	43	B	−91	472	81	48		
	17		1.80	44	B	−93	496	77	48		48
10– 5	16	T	2.20	18	A	−11	490	91	57	b	
	16		2.00	18	A	−11	514	86	50		
	17		1.80	18	A	−10	538	82	51		
	15	Ty	2.50	100		47	379	94	69	d	
	16		1.99	104		48	436	86	51		55
			Long method						41		
10– 6	16	T	2.20	21	A	−16	480	83	47	b	
	16		2.00	22	A	−14	504	81	48		
	17		1.80	23	A	−16	531	74	47		
	15	Ty	2.49	46		21	422	84	51	c	
	18		1.35	54		29	576	64	53		
	18		1.33	56		29	575	61	46		48
			Long method						43		
10– 7	16	T	2.21	22	A	−19	480	78	47	c	
	17		2.00	28	B	−84	493	80	45		
	17		1.80	33	B	−90	513	75	42		45
10– 9	13	M	1.50	41	A	−8	574	60	51	d	
	14		1.40	38	A	−9	590	58	47		
	14		1.32	36	A	−12	606	55	43		47
10–10	16	T	2.50	32	B	−72	416	96	38	c	
	17		2.00	30	B	−79	486	82	38		
	18		1.50	28	B	−98	559	66	37		38
			Long method						49		
10–11	12	M	2.00	20	A	−24	526	71	41	d	
	13		1.79	20	A	−24	560	67	49		
	13		1.50	18	A	−26	608	56	52		
	16	T	2.20	49	C	−15	424	99	39	c	
	17		2.00	46	C	−18	454	92	33		
	17		1.80	48	C	−20	479	87	35		40
10–12	12	M	2.00	15	A	−23	533	75	43	d	
	13		1.79	15	A	−23	563	70	45		
	13		1.50	15	A	−24	607	59	45		
	16	T	2.20	41	B	−93	435	84	43	c	
	17		2.00	42	B	−95	470	79	44		
	17		1.80	49	C	−42	492	74	45		44
10–13	16	T	2.20	49	C	−9	419	103	31	d	
	17		2.00	50	C	−6	440	100	28		
	17		1.80	52	C	19	447	109	15		25
10–14	16	T	2.20	59	C	−30	420	92	34	c	
	17		2.00	59	C	−30	443	87	31		
	17		1.80	60	C	−24	469	86	31		
	15	Ty	2.50	126		59	323	128	15	p	
	16		2.00	125		57	397	108	19		
	17		1.50	142		56	466	99	14		32
			Long method						45		
10–16	15	Ty	2.50	61		35	400	96	58	d	
	16		2.01	66		42	458	90	59		
	17		1.50	73		49	524	82	57		58
			Long method						47		
10–17	12	M	2.00	26	A	−18	526	74	54	d	
	13		1.80	24	A	−23	553	68	48		
	13		1.50	23	A	−22	601	58	47		
	15	Ty	2.51	52		33	399	102	44	d	
	16		2.00	60		39	465	91	52		
	17		1.50	51		43	522	90	47		49
1940—Continued											
10–18	16	T	2.50	84	D	53	340	139	36	c	
	16		2.20	87	D	55	379	130	40		
	17		2.00	87	D	55	409	124	42		
	15	Ty	2.50	44		22	416	89	48	b	
	16		2.00	43		21	488	76	48		
	17		1.50	45		23	555	65	43		44
			Long method						58		
10–19	16	T	2.51	104	D	49	379	123	50	d	
	18		1.50	123	D	57	511	93	44		47
			Long method						44		
		Ty	Long method						42		
10–20	12	M	1.80	18	A	−38	571	59	49	d	
	13		1.63	16	A	−32	600	56	50		
	13		1.50	17	A	−32	612	54	44		
	16	T	2.50	55	C	25	362	135	31	p	
	17		2.00	58	C	27	423	121	29		
	18		1.50	75	C	55	470	121	23		48
10–21	12	M	1.94	25	A	−1	528	86	53	d	
	13		1.65	24	A	−7	570	72	47		
	13		1.49	24	A	−10	598	66	53		
	15	Ty	2.50	92		55	367	110	60	p	
	16		2.20	99		55	402	101	58		
	16		2.01	102		60	425	103	55		51
10–22	12	M	2.20	20	A	−18	498	82	45	d	
	12		2.00	20	A	−19	530	76	54		
	12		1.80	21	A	−18	556	71	54		
	15	Ty	2.50	92		57	364	115	56	d	
	16		2.00	92		60	426	104	54		
	17		1.50	106		83	487	109	57		52
10–23	12	M	2.50	44	A	26	411	117	40	p	
	12		1.99	40	A	17	486	95	39		
	13		1.48	34	A	0	584	67	57		
			Long method						61		
10–24	12	M	1.80	25	A	−11	546	75	50	d	
	13		1.64	23	A	−13	569	68	42		
	13		1.49	22	A	−14	597	63	47		
	16	Ty	2.51	94		88	316	173	46	c	
	16		2.00	93		89	390	150	45		
	17		1.50	89		87	478	124	48		46
			Long method						42		
10–25	12	M	2.00	30	A	13	503	97	51	d	
	12		1.80	30	A	9	539	88	57		
	13		1.50	30	A	16	579	79	50		
	16	Ty	1.86	79		66	440	116	38	c	
	17		1.80	85		70	445	114	43		
	17		1.73	84		72	453	115	41		45
10–27	17	T	2.20	15	A	−9	494	95	57	c	
	17		2.00	14	A	−7	520	93	51		
	17		1.80	14	A	−5	547	90	53		54
10–28	12	M	1.80	23	A	−17	549	71	43	c	
	13		1.63	21	A	−17	577	65	41		
	13		1.50	22	A	−18	598	61	44		
	16	T	2.50	59	C	−52	401	81	48	b	
	17		2.20	58	C	−51	436	77	45		
	17		2.00	58	C	−51	462	74	44		
	16	Ty	2.46	29		16	451	91	51	b	
	16		2.00	29		15	511	78	49		
	17		1.80	29		16	541	74	53		47
10–29	12	M	1.99	23	A	−8	522	83	50	c	
	12		1.80	22	A	−12	552	76	49		
	13		1.50	21	A	−13	607	64	53		51
		Ty	Long method						49		
10–30	16	T	2.50	22	A	−11	440	95	49	b	
	17		2.20	20	A	−13	484	87	46		
	17		2.00	22	A	−10	505	85	48		
	16	Ty	2.50	59		36	403	99	65	d	
	16		2.00	52		32	476	86	62		
	18		1.50	54		30	551	70	62		52
			Long method						42		
10–31	17	T	2.51	66	C	−61	394	77	38	c	
	17		2.00	64	C	−63	461	68	43		
	19		1.51	69	C	−68	527	58	45		
			Long method						42		
	16	Ty	2.50	16		6	477	86	53	d	
	16		2.01	17		7	534	74	55		
	18		1.51	30		15	585	64	56		45
			Long method						63		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
11- 1	13	M	2.00	67	8	49	449	109	37	d	
	13		1.81	62	8	46	481	100	41		
	14		1.50	64	8	44	536	85	43		
	17	T	2.00	39	8	—121	486	69	48	b	
	17		1.90	41	8	—130	495	65	43		
	18		1.80	44	8	—132	511	63	49		
	16	Ty	2.51	40		17	437	82	64	c	
	16		2.00	38		17	502	73	61		
	18		1.50	37		16	577	60	49		48
			Long method						64		
11- 2	12	M	1.80	88	C	43	457	106	30	p	
	13		1.59	85	C	47	498	97	37		
	13		1.50	88	C	45	507	92	34		
	16	Ty	2.49	58		32	402	94	51	b	
	16		2.00	57		32	470	82	53		
	18		1.50	61		34	543	68	53		52
			Long method						48		
11- 3	12	M	1.72	94	C	33	474	99	44	p	
	13		1.59	94	C	33	487	92	28		
	13		1.50	91	C	33	511	88	36		
11- 4	12	M	1.80	84	C	3	483	85	44	d	
	13		1.59	79	C	7	515	78	46		
	13		1.50	80	C	6	528	74	39		
	17	T	2.51	35	8	—80	421	94	54	c	
	17		2.20	34	8	—75	454	88	41		
	17		2.00	31	8	—81	489	82	49		
	17	Ty	1.76	63		37	507	78	62	d	
	17		1.69	55		31	518	74	54		
	18		1.50	56		32	549	70	55		49
11- 6	17	T	2.50	19	A	—14	456	94	56	b	
	17		2.20	19	A	—12	487	90	51		
	17		2.00	23	A	—10	510	84	54		54
11- 8	13	M	1.56	31	A	5	577	74	49	d	
	13		1.48	24	A	—6	596	67	52		
	13		1.40	23	A	—7	612	64	48		
	17	T	2.50	37	8	—36	413	113	55	c	
	17		2.20	37	8	—44	453	101	51		
	17		2.00	36	8	—54	481	93	49		51
11- 9	13	M	1.60	27	A	6	569	79	52	c	
	13		1.50	28	A	9	587	75	55		
	13		1.40	28	A	11	598	72	45		
	16	Ty	2.49	39		25	425	100	51	d	
	16		2.20	42		26	464	93	54		
	17		1.82	39		23	516	80	53		52
11-10	12	M	1.70	30	A	—5	554	83	43	c	
	13		1.59	27	A	—8	571	78	38		
	13		1.50	26	A	—8	588	74	45		
	22	Ty	2.15	26		47	468	146	63	p	
	22		2.27	22		42	458	148	62		
	22		2.41	24		44	438	155	51		42
11-11	12	M	2.49	20	A	21	456	124	59	c	
	12		1.99	21	A	22	522	107	54		
	13		1.50	21	A	5	596	75	48		54
11-12	12	M	2.49	39	A	51	413	142	39	c	
	12		2.00	39	A	44	487	117	53		
	13		1.50	39	A	38	565	90	43		
			Long method						55		
	18	Ty	1.66	7		1	611	67	44	c	
	18		1.63	8		2	615	68	52		
	18		1.58	9		2	617	64	50		47
11-13	12	M	2.20	35	A	23	469	109	52	b	
	12		2.00	34	A	20	498	100	52		
	13		1.50	35	A	19	572	79	48		
	16	Ty	2.50	12		4	482	86	44	a	
	16		2.20	12		4	517	79	44		
	17		2.00	12		4	548	75	44		47
			Long method						52		
11-14	16	Ty	2.51	12		3	486	84	50	c	
	17		2.00	12		3	545	73	40		
	17		1.80	13		4	576	69	48		46
11-15	12	M	2.20	19	A	6	500	103	49	b	
	12		2.01	17	A	3	523	94	42		
	12		1.80	17	A	0	558	86	46		
	16	Ty	2.50	12		1	484	81	41	b	
	17		2.00	13		2	546	70	43		
	17		1.80	13		1	576	64	48		45
			Long method						57		
1940—Continued											
11-16	12	M	2.20	24	A	46	473	135	42	c	
	12		2.01	24	A	43	498	123	38		
	13		1.50	23	A	35	587	93	47		
	16	Ty	2.50	10		—1	485	79	43	b	
	17		2.01	11		1	545	70	36		
	17		1.80	10		0	573	65	38		40
			Long method						45		
11-17	12	M	2.20	31	A	62	454	144	36	c	
	12		1.80	29	A	54	517	119	33		
	13		1.50	27	A	43	571	97	36		35
11-18	12	M	2.00	22	A	26	503	110	38	b	
	12		1.80	23	A	27	537	102	42		
	13		1.43	21	A	21	602	81	36		39
11-19	12	M	2.49	13	A	3	478	110	49	c	
	12		2.00	11	A	—8	545	87	38		
	13		1.50	9	A	—20	626	64	43		43
			Long method						44		
11-20	12	M	2.20	18	A	—8	499	91	45	d	
	12		2.01	18	A	—12	526	82	42		
	13		1.50	18	A	—12	607	66	55		
	16	Ty	2.50	36		22	427	97	78	p	
	17		2.00	32		19	502	82	72		
	18		1.80	26		16	541	76	70		47
			Long method						67		
11-21	13	M	1.67	44	A	62	521	111	33	d	
	13		1.50	44	A	60	541	101	33		
	13		1.42	43	A	56	567	94	38		35
11-22	12	M	2.20	32	A	26	469	114	52	c	
	12		2.00	32	A	20	497	102	48		
	12		1.80	31	A	17	531	92	47		
	17	T	2.50	19	A	—13	441	95	40	c	
	17		2.21	18	A	—17	484	84	44		
	18		2.00	13	A	—28	524	73	41		46
11-23	12	M	1.99	25	A	16	511	101	47	c	
	12		1.80	24	A	12	537	92	42		
	13		1.50	24	A	14	583	80	39		
	17	T	2.50	13	A	—22	462	89	37	b	
	18		2.20	14	A	—21	499	83	41		
	18		2.01	13	A	—24	523	77	40		41
11-25	18	T	1.91	34	B	—117	502	67	37	c	
	18		1.87	33	8	—121	511	65	44		
	19		1.84	34	B	—123	512	64	41		41
11-26	12	M	2.01	19	A	1	521	92	44	d	
	12		1.80	17	A	—6	559	81	49		
	17	T	2.50	14	A	—17	464	93	47	b	
	17		2.20	12	A	—21	501	85	43		
	18		2.00	12	A	—25	530	77	43		45
11-27	12	M	2.51	28	A	37	430	135	42	c	
	12		2.00	27	A	31	500	112	37		
	13		1.50	27	A	28	581	88	47		
			Long method						48		
	17	T	2.50	25	8	—109	438	79	34	c	
	18		2.20	27	8	—113	475	73	41		
	18		2.00	27	8	—113	499	70	41		
	16	Ty	2.50	59		43	388	114	44	d	
	17		2.00	54		38	467	94	58		
	18		1.82	50		36	495	91	51		43
			Long method						49		
11-28	12	M	2.00	35	A	40	487	115	44	b	
	12		1.80	36	A	39	518	106	45		
	13		1.50	35	A	36	565	90	42		
	16	Ty	2.50	21		6	465	82	52	c	
	17		2.00	27		12	520	73	59		
	18		1.80	23		9	556	67	58		48
			Long method						25		
11-29	12	M	1.80	39	A	61	500	120	30	d	
	13		1.60	39	A	55	542	105	35		
	13		1.50	40	A	53	561	98	41		35
12- 1	12	M	1.99	50	8	54	461	121	39	p	
	12		1.80	49	8	52	489	111	33		
	13		1.60	55	B	62	510	105	26		
	18	T	1.94	53	C	—49	475	73	48	c	
	19		1.91	54	C	—52	480	71	50		
	19		1.88	56	C	—55	487	70	57		
	16	Ty	2.51	109		51	362	106	54	c	
	17		2.00	106		51	432	91	53		
	18		1.80	106		52	464	86	55		53
			Long method						61		
1940—Continued											
12- 2	12	M	2.21	34	A	—2	474	88	46	c	
	12		2.00	32	A	—6	504	82	49		
	13		1.50	28	A	—8	580	65	46		
	17	T	2.50	31	8	—103	434	83	43	a	
	18		2.20	28	8	—101	473	77	42		
	18		2.00	30	8	—107	493	72	42		
	16	Ty	2.51	55		25	415	82	64	d	
	17		2.00	54		25	484	72	60		
	18		1.80	49		24	514	69	59		45
			Long method						74		
12- 3	12	M	2.00	49	8	56	457	124	29	d	
	12		1.81	49	8	61	487	118	36		
	13		1.50	50	8	60	541	100	41		
	17	T	2.50	27	8	—88	434	88	45	b	
	18		2.20	29	8	—91	470	82	43		
	18		2.00	29	8	—97	495	76	40		
			Long method						40		
	17	Ty	2.35	23		8	477	79	44	b	
	17		2.20	24		8	496	75	47		
	17		2.00	24		10	521	73	48		44
12- 4	12	M	2.50	66	8	97	365	180	48	d	
	12		2.00	64	8	94	440	151	41		
	13		1.50	65	8	100	518	123	45		
			Long method						22		
	19	Ty	1.74	56		29	518	69	59	p	
	19		1.74	59		30	515	69	60		
	21		2.03	43		21	493	76	58		45
12- 6	17	T	2.50	28	8	—112	441	78	48	b	
	18		2.20	29	8	—111	473	74	46		
	18		2.00	28	8	—118	499	68	44		46
12- 7	17	T	2.49	36	8	—110	429	82	44	b	
	18		2.20	36	B	—107	465	77	54		
	18		2.00	34	8	—112	488	71	50		
	17	Ty	2.50	35		15	433	84	46	b	
	17		2.20	35		17	475	80	52		
	17		2.00	35		18	500	77	49		49
			Long method						47		
12- 8	12	M	2.00	31	A	—18	509	72	48	c	
	12		1.80	31	A	—22	537	65	44		
	13		1.50	32	A	—15	580	60	48		
	18	T	2.20	38	8	—116	461	74	43	c	
	18		2.12	40	B	—122	469	70	37		
	18		2.00	41	8	—124	481	69	37		
	17	Ty	2.50	24		8	457	82	54	a	
	17		2.20	24		8	497	75	52		
	18		2.00	25		9	524	71	55		50
			Long method						55		
12- 9	12	M	2.00	37	A	—2	498	82	52	c	
	12		1.80	36	A	—3	532	77	46		
	13		1.50	37	A	3	571	69	47		48
12-10	12	M	2.50	56	8	26	404	108	48	d	
	12		1.99	53	8	20	473	88	39		
	13		1.50	52	8	17	556	69	48		45
			Long method						58		
12-11	12	M	2.21	27	A	—16	493	81	56	d	
	12		2.00	25	A	—19	522	74	52		
	13		1.50	23	A	—20	606	59	57		55
12-15	12	M	1.80	61	8	26	501	84	49	d	
	13		1.62	57	8	22	523	75	37		
	13		1.50	56	8	22	544	71	43		
	17	Ty	2.51	3		—5	528	80	52	b	
	17		2.20	3		—4	566	74	54		
	18		2.00	2		—4	591	70	53		50
			Long method						61		
12-16	13	M	1.50	50	B	36	552	83	48	d	
	13		1.41	48	8	30	573	75	50		
	13		1.35	47	8	27	582	69	42		47
12-19	13	M	1.62	62	8	39	527	88	54	d	
	13		1.50	62	8	42	547	84	58		
	13		1.39	61	8	45	562	79	52		55
12-20	13	M	1.76	62	8	43	493	96	42	d	
	13		1.64	62	8	47	520	94	57		
	13		1.50	62	B	52	535	91	49		
	17	Ty	2.50	24		9	458	83	52	a	
	17		2.20	25		10	496	77	52		
	18		2.00	25		10	521	73	48		51
			Long method						47		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1940—Continued											
12-21	12	M	2.00	55	B	40	471	105	52	d	
	12		1.80	52	B	34	506	95	53		
	13		1.50	48	B	29	552	79	42		
	17	Ty	2.48	27		10	458	82	55	c	
	17		2.20	27		10	492	75	51		51
			Long method						45		
12-22	12	M	1.80	88	C	108	460	138	63	p	
	13		1.66	87	C	116	485	133	61		
	13		1.50	87	C	116	504	122	53		
	19	Ty	1.80	37		19	533	72	58	d	
	19		1.80	37		19	532	72	56		
	20		1.82	35		18	527	72	54		56
12-23	12	M	2.00	67	B	41	461	101	50	d	
	12		1.80	64	B	37	487	92	37		
	13		1.50	65	B	39	535	80	37		
	18	Ty	1.91	90		44	467	72	62	p	
	18		1.88	87		42	475	71	63		
	18		1.85	85		42	477	71	61		41
12-24	12	M	2.49	109	C	77	345	162	56	p	
	12		2.21	104	C	73	388	145	53		
	12		2.00	103	C	76	419	136	52		
12-26	18	T	2.10	68	C	—49	442	79	43	d	
	19		2.00	66	C	—45	455	79	46		
	17	Ty	2.49	26		11	459	84	60	c	
	17		2.20	29		13	490	79	60		
	18		2.00	30		14	514	74	58		50
			Long method						56		
12-27	17	Ty	2.50	100		39	382	82	63	d	
	17		2.20	102		37	422	73	58		
	18		2.00	100		39	451	70	53		58
			Long method						57		
12-31	18	T	2.49	9	A	0	470	119	47	c	
	18		2.20	13	A	2	492	109	41		
	19		2.00	14	A	3	516	104	44		44
1941											
1- 1	13	M	1.50	1.49	C	156	456	149	45	p	
	13		1.42	1.48	C	148	468	138	35		
	14		1.34	1.47	C	143	489	131	44		
	18	T	2.10	10	A	1	516	108	42	c	
	18		2.04	9	A	0	527	106	39		
	19		2.00	8	A	—1	533	105	39		40
1- 2	12	M	2.00	1.16	C	186	384	200	54	p	
	13		1.76	1.14	C	168	426	172	43		
	13		1.50	1.09	C	165	471	149	35		
	17	T	2.49	5	A	—16	495	103	39	b	
	17		2.20	5	A	—16	530	96	43		
	18		2.00	6	A	—15	550	91	35		39
1- 3	18	T	2.50	10	A	—19	472	95	38	b	
	18		2.20	10	A	—18	505	90	31		
	19		2.00	8	A	—22	537	83	35		35
			Long method						34		
1- 6	12	M	1.80	1.24	C	128	421	155	48	d	
	13		1.64	1.21	C	128	453	143	46		
	13		1.50	1.21	C	123	477	131	43		46
1- 7	12	M	2.00	99	C	52	430	122	53	d	
	13		1.80	94	C	51	459	111	54		
	13		1.50	89	C	35	518	88	56		54
1- 8	12	M	1.99	87	C	65	433	126	51	d	
	13		1.80	94	C	58	463	115	51		
	13		1.50	93	C	52	518	96	52		
	17	Ty	2.49	71		36	398	87	63	d	
	17		2.20	70		36	438	81	56		56
			Long method						57		
1- 9	12	M	2.00	1.07	C	75	416	137	48	c	
	13		1.80	1.09	C	78	444	128	47		
	13		1.50	1.05	C	82	492	110	41		45
1-10	12	M	2.50	90	C	79	361	158	67	d	
	12		2.00	90	C	74	431	132	54		
	13		1.50	81	C	85	512	107	49		57
			Long method						30		
1-11	12	M	1.99	75	B	129	427	177	60	d	
	13		1.80	73	B	127	459	162	60		
	13		1.50	70	B	117	515	133	58		59
1-12	12	M	2.00	1.18	C	235	375	228	60	p	
	13		1.80	1.22	C	235	404	209	53		
	13		1.50	1.20	C	242	458	183	49		
1-14	12	M	2.00	1.23	C	188	386	202	66	p	
	13		1.80	1.16	C	183	423	182	66		
	13		1.50	1.13	C	169	480	150	55		
1941—Continued											
1-14	17	T	2.49	8	A	—20	481	96	36	b	
	18		2.20	7	A	—20	512	90	32		
	18		2.00	8	A	—20	538	85	34		43
1-15	13	M	1.80	1.27	C	163	417	174	62	p	
	13		1.61	1.27	C	167	447	161	45		
	13		1.50	1.29	C	172	468	153	53		
	18	T	2.00	37	B	—55	479	92	45	c	
	19		1.90	37	B	—64	487	88	42		44
1-16	12	M	2.00	1.15	C	124	400	165	57	d	
	13		1.80	1.05	C	119	437	148	54		
	13		1.50	1.02	C	111	498	123	52		
	17	Ty	2.51	23		9	456	85	51	b	
	17		2.20	24		10	492	79	54		
	18		2.00	24		11	515	76	48		52
1-17	12	M	2.00	1.50	C	148	371	185	54	d	
	13		1.80	1.40	C	147	406	167	52		
	13		1.50	1.38	C	142	466	141	53		
	17	Ty	2.49	17		4	469	82	44	b	
	17		2.20	16		4	510	76	50		
	18		2.00	17		5	532	72	50		51
			Long method						55		
1-18	12	M	2.00	1.19	C	128	395	168	53	p	
	13		1.80	96	C	134	431	153	53		
	13		1.50	1.04	C	120	487	127	41		
	17	Ty	2.50	38		12	440	76	52	b	
	17		2.20	40		15	472	72	53		
	17		2.00	39		14	500	67	53		53
			Long method						53		
1-19	12	M	2.00	1.29	C	140	377	176	45	d	
	13		1.80	1.30	C	139	412	161	44		
	13		1.50	1.31	C	138	462	139	39		
	17	Ty	2.50	35		11	444	76	58	b	
	17		2.20	37		13	480	72	61		
	17		2.00	37		13	508	66	64		60
			Long method						67		
1-20	21	Ty	1.75	43		19	530	66	60	d	
	21		1.80	44		21	519	70	54		
	21		1.85	45		22	513	72	62		59
1-21	17	Ty	2.49	24		8	460	82	53	c	
	17		2.20	20		6	501	76	51		
	17		2.00	18		5	531	71	50		51
			Long method						56		
1-22	13	M	1.80	1.20	C	142	412	161	36	p	
	13		1.62	1.18	C	134	445	145	35		
	13		1.50	1.24	C	142	475	140	51		
1-30	17	T	2.48	50	C	—31	400	94	41	c	
	17		2.18	47	C	—39	439	88	36		
	18		2.00	46	C	—41	465	84	40		39
1-31	17	T	2.50	31	B	—78	423	94	32	c	
	17		2.20	33	B	—73	456	89	37		
	18		2.00	33	B	—76	517	84	28		32
			Long method						33		
2- 2	12	M	2.00	1.13	C	64	414	132	55	d	
	13		1.80	1.14	C	64	441	122	51		
	13		1.50	1.07	C	57	504	101	55		
	17	T	2.49	24	A	14	414	124	25	c	
	17		2.20	21	A	12	459	114	31		
	18		2.00	21	A	11	486	107	28		37
2- 3	12	M	2.00	62	B	35	460	98	49	d	
	13		1.81	61	B	34	490	90	48		
	17	T	2.50	21	A	—11	437	95	37	b	
	17		2.20	20	A	—13	475	87	39		
	18		2.00	20	A	—14	506	82	40		42
2- 4	12	M	2.50	57	B	54	385	136	44	d	
	12		2.00	59	B	46	467	109	55		
	13		1.50	60	B	47	542	88	55		
	17	T	2.49	25	A	—3	426	102	34	b	
	17		2.20	26	A	—3	461	94	36		
	18		1.99	25	A	—5	388	88	31		38
2- 5	17	T	2.50	32	B	—80	420	92	40	c	
	17		2.20	29	B	—75	462	88	41		
	18		2.00	36	B	—79	477	84	35		39
2- 7	12	M	2.01	90	C	106	422	151	51	d	
	13		1.80	87	C	105	459	137	63		
	13		1.50	79	C	106	512	116	54		
	17	T	2.50	14	A	—24	462	85	46	c	
	17		2.20	22	A	—20	482	79	50		
	18		2.00	21	A	—18	507	77	47		50
1941—Continued											
2- 9	19	Ty	1.48	68		37	540	66	48	c	
	19		1.47	68		38	539	68	49		
	19		1.47	71		41	538	69	49		49
2-10	16	Ty	2.49	96		42	377	87	48	d	
	17		2.20	1.01		42	414	80	49		
	17		2.00	1.01		42	440	75	45		47
2-13	16	Ty	2.50	49		24	414	80	50	c	
	16		2.20	50		25	455	81	53		
	17		2.04	49		25	473	78	47		50
2-21	13	M	2.00	89	C	46	444	116	62	p	
	13		1.81	80	C	49	473	107	57		
	13		1.50	85	C	62	519	99	58		
2-22	13	M	1.99	62	B	40	472	103	62	d	
	13		1.80	64	B	44	500	98	62		
	13		1.50	64	B	53	543	91	59		61
2-24	13	M	2.00	62	B	32	487	96	59	d	
	13		1.81	48	B	23	523	87	64		
	13		1.50	47	B	18	560	72	53		59
2-25	17	T	2.20	10	A	4	501	114	49	c	
	17		1.99	10	A	3	526	107	45		
	18		1.78	11	A	0	548	97	41		45
2-26	13	M	2.00	74	B	66	455	122	60	d	
	13		1.80	73	B	68	487	114	66		
	13		1.50	74	B	67	535	98	66		63
2-27	13	M	2.00	70	B	66	452	122	56	p	
	13		1.81	68	B	60	489	109	62		
	13		1.50	61	B	52	556	91	72		
	16	Ty	2.48	75		49	378	108	51	c	
	16		2.19	73		47	416	99	47		
	16		1.99	72		46	446	92	48		49
2-28	12	M	2.48	63	B	73	386	154	54	p	
	13		2.00	57	B	66	450	128	44		
	18	Ty	1.40	55		31	558	66	43	c	
	18		1.38	57		31	560	64	43		
	19		1.36	54		29	570	63	46		44
3- 2	12	M	2.20	1.18	C	93	389	161	81	p	
	13		2.00	1.21	C	76	416	140	73		
	13		1.80	1.20	C	61	452	121	70		
3- 3	13	M	2.00	1.05	C	87	420	143	65	p	
	13		1.81	1.03	C	87	454	131	70		
	13		1.50	1.01	C	87	503	112	56		
	16	Ty	2.51	28		46	412	154	49	c	
	16		2.01	23		36	493	122	45		
	17		1.50	23		35	565	101	47		47
			Long method						45		
3- 4	12	M	2.20	86	C	77	410	143	67	d	
	13		2.00	88	C	79	430	134	58		
	13		1.80	86	C	75	467	122	64		63
3- 6	13	M	2.00	72	B	58	454	114	61	d	
	13		1.80	64	B	50	486	103	46		
	13		1.50	56	B	41	544	85	49		
	16	Ty	2.50	60		51	364	130	37	c	
	16		2.20	59		47	419	114	50		
	17		1.78	60		53	471	108	46		47
3- 7	16	T	2.50	23	A	14	366	124	30	p	
	17		2.20	24	A	14	454	115	32		
	17		1.50	21	A	9	555	91	20		
3- 8	16	Ty	2.50	9		8	487	98	44	b	
	16		2.00	8		7	554	84	45		
	17		1.50	7		6	618	70	39		43
			Long method						43		
3- 9	13	M	2.00	67	B	24	463	86	44	d	
	13		1.80	64	B	18	505	77	53		
	13		1.50	71	B	20	555	65	57		51
3-13	13	M	2.00	45	A	7	484	86	49	d	
	14		1.49	40	A	—2	574	65	53		51
			Long method						54		
3-14	13	M	2.00	45	A	64	469	130	38	d	
	13		1.81	42	A	58	508	116	49		
	14		1.50	37	A	40	562	91	39		42
3-15	13	M	2.00	44	A	25	498	100	68	d	
	13		1.80	46	A	23	515	88	50		
	14		1.50	42	A	16	574	75	61		
	16	T	2.20	24	B	237	416	210	49	d	
	17		2.00	26	B	239	446	195	52		
	17		1.80	27	B	237	473	181	51		55
3-16	13	M	1.80	46	B	28	523	92	63	d	
	13		1.63	46	B	28	546	85	65		
	14		1.50	48	B	26	576	77	68		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1941—Continued											
3–16	16	T	2.53	32	B	85	379	161	36	d	
	17		2.00	33	B	67	457	135	45		
	17		1.50	35	B	24	534	104	41		53
3–17	16	T	2.50	22	A	38	398	153	25	c	
	17		2.00	24	A	32	468	127	30		
	17		1.50	25	A	25	541	103	33		29
3–18	16	T	2.50	29	B	1	401	126	33	c	
	17		2.00	30	B	−6	464	108	28		
	17		1.50	33	B	30	522	106	26		
	15	Ty	2.50	49		62	362	168	37	b	
	16		1.99	48		60	442	140	46		
	17		1.51	49		59	516	114	41		40
			Long method						55		
3–19	15	Ty	2.50	47		91	327	223	40	d	
	16		2.00	58		94	397	194	41		
	17		1.50	71		116	460	180	54		44
3–21	13	M	2.00	62	B	29	469	93	48	c	
	13		1.80	61	B	27	500	85	50		
	14		1.50	60	B	25	555	72	59		52
3–22	13	M	2.00	33	A	−12	513	76	59	c	
	13		1.80	32	A	−12	539	72	53		
	14		1.50	27	A	−17	593	60	58		57
3–23	13	M	2.00	42	A	15	496	93	59	d	
	13		1.80	47	B	22	525	87	67		
	14		1.50	38	A	15	570	75	53		
	16	T	2.40	28	B	277	368	248	67	p	
	16		2.20	30	B	260	407	218	64		
	16		2.00	29	B	275	438	209	62		60
3–24	13	M	2.00	25	A	−18	527	75	56	d	
	13		1.80	23	A	−22	555	68	52		
	14		1.50	16	A	−29	609	55	43		
	16	T	2.49	12	A	117	396	266	49	d	
	16		1.99	11	A	113	472	218	52		
	17		1.50	13	A	109	548	172	51		
	15	Ty	2.50	61		123	307	285	63	p	
	15		2.19	57		119	361	257	66		
	16		2.00	63		128	379	251	65		51
3–25	16	T	2.50	25	A	118	358	256	36	d	
	16		2.00	28	A	131	427	226	46		
	17		1.50	24	A	122	517	176	48		43
			Long method						52		
3–26	12	M	2.51	58	B	42	398	121	50	d	
	13		2.01	53	B	35	476	102	56		
	14		1.50	47	B	20	555	73	39		
			Long method						53		
	16	Ty	2.00	36		56	447	146	28	p	
	16		1.80	41		60	467	138	29		
	17		1.50	45		69	505	131	30		47
			Long method						47		
3–27	15	Ty	2.50	57		129	294	306	47	p	
	16		2.00	58		127	377	254	54		
	17		1.40	55		129	485	203	27		43
			Long method						53		
3–28	13	M	2.00	23	A	−9	525	82	52	c	
	13		1.81	18	A	−17	557	73	48		
	14		1.50	18	A	−18	606	62	49		50
3–29	13	M	2.00	33	A	12	506	95	57	d	
	13		1.80	33	A	15	536	90	60		
	14		1.50	30	A	7	584	74	52		
	16	Ty	2.00	53		91	413	193	31	p	
	16		1.80	48		78	456	162	31		
	17		1.50	54		90	502	154	35		56
3–30	13	M	2.00	20	A	−10	533	83	57	c	
	13		1.80	18	A	−16	568	74	59		
	14		1.50	15	A	−23	617	59	57		
	15	Ty	2.50	20		55	412	188	48	p	
	16		2.00	22		65	479	176	55		
	17		1.50	37		77	535	150	64		58
			Long method						40		
3–31	13	M	2.00	16	A	−32	548	67	55	d	
	13		1.80	15	A	−33	575	63	54		
	14		1.50	13	A	−34	625	65	57		55
4– 1	13	M	2.00	19	A	−30	544	68	56	c	
	13		1.80	17	A	−32	565	63	45		
	14		1.50	17	A	−22	616	60	55		52
4– 2	13	M	2.00	55	B	55	461	119	47	d	
	13		1.80	56	B	54	499	109	39		
	14		1.50	55	B	52	539	93	44		43
1941—Continued											
4– 3	13	M	2.00	32	A	10	497	94	45	c	
	13		1.80	32	A	5	531	84	48		
	14		1.49	29	A	7	583	74	51		48
4– 4	13	M	1.62	33	A	19	557	86	44	d	
	14		1.50	32	A	16	578	79	49		
	14		1.41	30	A	13	595	73	48		
	15	Ty	2.50	29		30	413	122	25	c	
	15		2.00	32		31	482	104	34		
	16		1.50	38		31	551	82	34		40
			Long method						50		
4– 5	16	T	1.88	16	A	−1	525	95	42	c	
	16		1.77	16	A	1	540	93	44		
	17		1.67	13	A	−2	561	91	44		
	15	Ty	1.95	64		48	448	102	37	c	
	16		1.84	62		47	463	99	37		
	16		1.74	63		44	487	89	43		41
4– 6	13	M	2.00	26	A	−10	513	80	52	d	
	13		1.81	25	A	−15	541	72	56		
	14		1.50	25	A	−15	589	62	57		55
4– 7	13	M	2.00	38	A	−17	510	70	65	d	
	13		1.80	36	A	−20	537	65	57		
	14		1.50	33	A	−13	578	59	49		
	15	Ty	2.50	21		77	398	234	57	c	
	15		2.00	21		74	471	194	57		
	16		1.50	25		77	542	159	63		58
			Long method						44		
4– 8	13	M	1.70	27	A	−20	561	65	48	c	
	13		1.62	26	A	−18	574	63	49		
	14		1.50	27	A	−18	590	59	49		
	16	T	2.50	50	B	123	346	183	22	d	
	16		2.00	45	B	115	426	155	30		
	17		1.50	41	B	119	519	133	32		
			Long method						34		
	15	Ty	2.50	43		69	378	191	51	c	
	15		2.01	46		71	443	163	54		
	16		1.50	48		74	519	136	55		48
			Long method						41		
4– 9	13	M	2.00	25	A	−11	525	87	55	d	
	13		1.80	25	A	−14	553	73	55		
	14		1.50	24	A	−11	585	65	38		49
4–10	13	M	2.00	58	B	29	479	94	58	p	
	13		1.80	52	B	26	501	88	41		
	14		1.50	54	B	33	542	80	40		
4–11	13	M	1.81	74	B	47	481	97	42	p	
	13		1.64	70	B	41	514	87	48		
	14		1.50	60	B	35	538	79	41		
4–12	13	M	1.80	19	A	−37	566	60	46	c	
	14		1.62	20	A	−35	600	54	57		
	14		1.50	18	A	−34	617	52	53		52
4–13	21	Ty	1.17	37		48	592	79	41	d	
	21		1.19	38		48	586	81	37		
	21		1.22	38		51	577	86	37		38
4–14	15	Ty	2.51	25		52	396	176	33	c	
	15		2.00	30		54	465	147	45		
	16		1.50	28		48	549	115	45		41
			Long method						51		
4–15	16	T	2.47	38	B	114	373	174	46	b	
	16		2.00	36	B	126	442	157	46		
	17		1.50	35	B	139	518	137	41		
	15	Ty	2.50	39		53	382	161	37	c	
	15		2.00	35		48	460	131	38		
	16		1.51	34		42	543	103	43		43
			Long method						52		
4–16	13	M	2.20	50	B	7	466	83	57	c	
	13		2.01	49	B	6	487	78	51		
	13		1.80	50	B	5	525	71	60		
	16	T	2.50	7	A	108	422	259	48	c	
	17		2.20	6	A	101	469	228	47		
	17		2.00	5	A	102	502	213	45		
	16	Ty	2.50	36		82	360	227	46	c	
	16		2.00	39		82	438	191	59		
	17		1.50	33		85	524	164	57		53
			Long method						32		
4–17	12	M	2.50	27	A	−29	466	75	61	p	
	13		2.00	25	A	−30	533	66	62		
	13		1.81	25	A	−35	557	59	46		
1941—Continued											
4–18	12	M	2.50	29	A	−26	459	78	52	d	
	13		2.00	30	A	−27	528	66	57		
	14		1.51	28	A	−29	602	52	62		57
			Long method						79		
4–19	15	T	2.50	27	B	49	392	145	25	p	
	16		2.00	27	B	52	456	129	22		
			Long method						43		
	16	Ty	2.50	12		23	452	126	33	c	
	16		2.00	11		21	519	107	32		
	17		1.50	13		21	597	88	46		37
			Long method						48		
4–22	16	T	2.20	39	B	126	396	166	24	c	
	16		2.00	38	B	103	431	153	26		
	17		1.50	38	B	83	510	122	20		23
4–26	13	M	2.20	53	B	11	464	85	45	d	
	13		2.00	52	B	3	495	73	46		
	14		1.80	52	B	−3	529	64	56		49
4–27	13	M	2.21	32	A	−28	492	68	61	d	
	13		2.00	30	A	−31	526	63	59		
	14		1.80	27	A	−35	554	58	49		56
5– 4	13	M	2.50	61	B	1	425	76	66	d	
	13		2.00	53	B	−6	495	64	54		
	14		1.80	50	B	−10	525	60	57		59
5– 5	13	M	2.01	42	A	−9	497	75	55	d	
	14		1.73	40	A	−18	542	61	52		
	15	T	2.51	112	D	31	349	92	42	c	
	16		2.00	105	D	25	421	80	37		
	16		1.50	96	D	18	501	66	38		
			Long method						43		
	14	Ty	2.48	64		51	379	128	46	c	
	15		2.00	64		48	447	104	48		
	16		1.50	70		46	521	78	43		44
5– 6	13	M	2.50	10	A	−38	515	74	61	d	
	13		2.01	9	A	−40	566	64	48		
			Long method						69		
	16	T	1.80	45	B	−61	489	87	42	b	
	16		1.66	44	B	−65	512	82	42		
	16		1.50	41	B	−63	541	79	44		
	14	Ty	2.50	62		38	390	102	50	c	
	15		2.00	50		37	457	87	41		
	16		1.50	59		35	536	71	43		45
			Long method						45		
5– 7	13	M	2.20	23	A	−33	510	67	54	c	
	13		2.00	21	A	−35	538	63	56		
	14		1.80	23	A	−34	560	60	50		
	14	Ty	2.51	58		51	384	132	60	d	
	15		2.00	56		48	453	112	52		
	16		1.50	54		46	529	92	46		53
			Long method						43		
5– 8	13	M	2.50	38	A	−13	444	84	63	d	
	13		2.00	37	A	−15	507	72	59		
	14		1.80	38	A	−14	536	68	58		
	15	T	2.51	38	B	−85	413	92	40	c	
	15		2.00	39	B	−95	477	78	39		
	16		1.49	41	B	−107	545	66	43		
	15	Ty	1.80	48		35	495	89	44	d	
	15		1.66	46		33	517	84	39		
	16		1.50	42		26	545	78	31		45
5– 9	13	M	2.21	58	B	4	457	76	36	p	
	13		2.01	55	B	0	490	69	56		
	14		1.81	55	B	1	518	66	58		
	15	T	2.50	30	B	−79	423	93	40	b	
	15		2.00	30	B	−82	487	81	42		
	16		1.50	30	B	−96	558	67	40		
	14	Ty	2.49	89		81	320	164	32	d	
	15		2.00	94		84	391	142	36		
	16		1.54	92		83	468	119	35		40
5–10	13	M	2.50	46	B	2	435	86	59	d	
	13		2.00	43	A	−12	502	72	61		
	14		1.80	40	A	−15	528	67	54		
	15	T	2.50	55	C	7	364	124	23	d	
	15		2.01	59	C	11	426	112	26		
	16		1.50	64	C	26	487	106	25		42
5–11	20	Ty	1.04	86		73	568	92	30	p	
	20		1.04	125		89	543	99	33		
	20		1.05	128		97	537	103	40		
5–17	15	T	2.00	17	A	10	505	109	47	c	
	16		1.80	16	A	10	534	104	39		
	16		1.50	16	A	5	574	91	40		42

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1941—Continued										
5–19	15	T	2.51	17	A 97	393	235	47	d	
	15		2.00	17	A 101	465	203	54		
	16		1.50	15	A 89	549	157	46		49
5–22	15	T	2.50	87	D 130	285	260	52	d	
	15		2.00	89	D 140	357	230	55		54
5–26	13	M	2.51	44	A −9	442	85	74	d	
	13		2.20	41	A −11	484	77	70		
	14		2.00	42	A −13	514	72	77		74
5–27	13	M	2.51	35	A 8	435	104	56	d	
	13		2.20	32	A 2	481	91	51		
	14		2.00	30	A 0	506	87	48		52
5–28	13	M	2.51	15	A −40	498	71	58	c	
	14		2.01	13	A −42	563	61	55		
	15		1.51	11	A −42	637	49	57		57
			Long method					64		
5–29	13	M	2.50	13	A −40	507	71	62	d	
	13		2.21	14	A −38	533	67	54		
	14		2.00	13	A −39	555	63	44		
	16	T	1.45	38	D 125	534	131	57	d	
	17		1.40	40	D 132	541	131	58		
	17		1.37	42	D 123	546	128	55		55
5–30	13	M	2.50	11	A −33	506	78	59	d	
	13		2.20	10	A −35	547	71	58		
	14		2.01	11	A −36	569	66	58		58
5–31	13	M	2.20	15	A −33	533	71	67	d	
	14		2.00	13	A −36	569	65	72		
	14		1.81	13	A −35	591	62	61		67
6– 1	13	M	2.47	29	A −15	457	86	54	d	
	13		2.20	30	A −19	496	76	60		
	14		2.00	31	A −18	526	72	70		
	15	T	2.51	37	B 191	370	211	82	p	
	15		2.00	38	B 198	439	183	71		
	16		1.50	49	B 132	504	152	59		61
6– 2	13	M	2.50	62	B 25	410	103	65	d	
	13		2.20	63	B 29	449	98	63		
	14		2.00	64	B 29	476	92	60		63
6– 3	13	M	2.48	62	8 18	413	96	55	d	
	13		2.20	61	B 17	450	87	53		
	14		2.00	62	B 14	479	79	53		54
6– 5	13	M	2.50	75	8 19	410	90	68	d	
	13		2.20	70	B 15	452	81	54		
	14		2.00	69	B 14	476	76	49		
	15	T	2.50	88	D 99	302	204	41	c	
	15		2.00	85	D 93	384	169	46		
	16		1.50	88	D 91	472	141	49		
	16	Ty	1.50	58	106	493	176	69	d	
	16		1.44	51	94	511	160	62		
	16		1.36	46	85	535	145	52		52
6– 7	18	T	1.12	18	A −11	636	64	41	d	
	18		1.09	19	A −8	638	66	43		
	19		1.06	18	A −6	646	67	35		
	15	Ty	1.59	64	123	467	206	78	p	
	16		1.46	54	114	498	189	64		40
6– 8	13	M	2.50	42	A 8	433	102	62	p	
	13		2.21	38	A 3	471	90	59		
	14		2.00	42	A 2	497	83	60		
	15	T	2.49	49	C 44	358	148	34	d	
	15		1.99	50	C 42	431	129	42		
	16		1.50	57	C 57	496	120	47		41
6– 9	15	T	2.51	85	D 98	296	206	35	d	
	15		2.01	72	C 79	399	155	49		
	16		1.50	66	C 61	490	123	52		45
6–10	15	T	2.51	71	C 21	359	135	50	c	
	15		2.19	74	C 23	403	127	52		
	16		1.50	71	C −20	513	82	40		
			Long method					50		
	14	Ty	2.51	79	82	314	177	25	d	
	15		1.99	78	81	393	150	26		
	16		1.50	81	83	471	123	29		42
6–11	15	T	2.20	100	D 81	355	157	45	c	
	15		2.00	95	D 67	398	134	40		
	16		1.50	93	D 49	488	99	44		43
6–12	14	Ty	2.49	88	90	304	184	25	d	
	15		2.00	86	91	382	160	31		
	16		1.50	81	85	474	126	36		31
			Long method					57		
1941—Continued										
6–13	14	Ty	2.51	92	118	268	238	25	d	
	15		2.00	95	123	347	204	37		
	16		1.50	91	123	443	168	45		36
			Long method					63		
6–15	23	T	1.40	86	D 59	494	109	32	d	
	23		1.50	87	D 67	474	120	30		31
6–16	18	T	1.08	19	A −27	651	55	40	c	
	19		1.06	18	A −25	654	55	39		
	19		1.05	17	A −28	658	54	39		39
6–17	13	M	2.50	12	A −41	509	71	61	d	
	13		2.20	11	A −40	543	66	55		
	14		2.00	10	A −41	571	63	59		
	15	T	2.50	35	B −116	428	78	50	b	
	15		2.00	35	B −119	494	69	52		
	16		1.50	33	B −132	565	57	48		
	14	Ty	2.51	92	132	268	261	43	d	
	15		2.00	92	130	354	219	53		
	16		1.50	91	130	450	179	64		52
6–18	13	M	2.21	6	A −47	561	67	59	d	
	14		2.00	5	A −43	591	63	58		
	14		1.80	3	A −45	617	59	54		57
6–19	15	T	2.20	70	C −62	429	72	57	c	
	15		1.99	70	C −64	459	68	46		
	16		1.50	75	C −65	522	60	44		49
6–20	24	T	2.00	47	C −47	473	75	47	d	
	25		2.20	47	C −30	444	83	49		48
6–21	15	T	2.51	28	8 −118	442	76	53	c	
	15		2.00	29	B −122	507	67	55		
	16		1.50	29	B −133	577	56	60		56
6–22	13	M	2.50	31	A −30	456	72	53	p	
	13		2.20	32	A −29	498	67	69		
	14		2.00	34	A −30	522	62	63		
6–23	15	T	2.21	74	C −43	421	85	51	c	
	15		2.00	73	C −44	451	80	53		
	16		1.50	74	C −55	526	65	53		52
6–24	13	M	2.50	33	A −27	458	74	69	p	
	13		2.20	35	A −23	490	70	60		
	14		2.00	32	A −25	515	67	56		
	21	T	1.06	46	C 30	600	91	49	d	
	21		1.08	48	C 32	594	93	45		
	22		1.10	43	C 33	594	94	58		51
6–25	13	M	2.50	36	A −8	433	90	48	d	
	14		2.20	35	A −8	481	83	58		
	14		2.00	34	A −8	494	79	36		
	15	T	2.51	38	B 63	390	153	55	c	
	15		2.00	39	B 39	463	126	56		
	16		1.50	46	B 12	529	103	56		53
			Long method					62		
6–26	13	M	2.50	20	A −37	482	71	56	c	
	14		2.00	19	A −33	543	66	53		
	15		1.50	15	A −21	619	61	47		
			Long method					54		
	14	Ty	2.50	119	95	301	177	55	d	
	15		2.00	118	96	380	151	58		
	16		1.50	111	92	470	121	57		53
			Long method					49		
6–27	15	T	2.50	29	B −2	413	125	52	b	
	15		2.00	29	B −2	482	110	54		
	16		1.50	32	8 −4	545	95	47		51
6–28	15	T	2.50	59	C 37	351	147	41	c	
	15		2.00	58	C 36	428	128	44		
	16		1.50	63	C 40	500	113	50		45
6–29	15	T	2.50	70	C 35	344	145	45	c	
	16		1.80	68	C 30	449	119	47		
	16		1.50	71	C 55	483	120	44		45
6–30	15	T	2.49	56	C −31	396	97	59	d	
	15		2.00	56	C −30	458	87	57		58
7– 1	15	T	2.50	76	D 83	316	186	36	d	
	15		2.00	76	D 81	391	160	21		
	16		1.50	73	D 70	476	127	36		31
7– 2	15	T	2.48	71	D 56	345	149	34	d	
	15		2.00	82	D 67	401	140	42		
	16		1.50	94	D 76	465	124	36		
	13	Ty	2.51	102	77	336	147	63	d	
	13		2.00	97	71	416	120	53		
	14		1.50	93	61	498	94	42		45
			Long method					51		
1941—Continued										
7– 3	15	T	2.51	33	B −82	418	93	47	b	
	15		2.00	34	B −86	485	80	49		
	16		1.50	38	B −91	553	70	51		49
			Long method					44		
		Ty	Long method					34		
7– 4	13	M	2.50	32	A −6	445	95	58	d	
	13		2.20	32	A −3	483	89	62		
	14		1.99	32	A −4	512	84	55		
	15	T	2.50	28	8 −73	429	95	51	d	
	15		2.00	29	B −83	495	81	55		
	16		1.50	38	8 −49	559	82	53		56
7– 5	13	M	2.50	39	A −8	442	89	67	d	
	13		2.20	40	A −9	481	80	73		
	14		2.00	38	A −10	508	75	69		
	15	T	2.49	43	B −35	392	115	41	c	
	15		2.00	41	8 −35	459	101	33		
	16		1.50	53	C 20	506	101	44		48
7– 6	13	M	2.50	48	B 1	438	84	69	d	
	13		2.19	47	B 1	475	78	61		
	14		2.00	43	A −13	501	71	65		65
7– 8	14	M	2.00	28	A −33	529	62	59	d	
	15		1.56	26	A −25	587	56	49		54
7–12	13	M	2.49	34	A −23	460	76	65	d	
	14		1.99	36	A −29	515	62	60		
	15		1.49	37	A −19	580	55	62		
	15	T	2.00	17	A −25	461	82	54	c	
	15		1.94	18	A −26	531	70	52		56
7–13	13	M	2.50	25	A −39	474	67	63	d	
	14		1.99	23	A −39	545	59	69		
	15		1.49	17	A −39	615	50	51		
			Long method					60		
	15	T	2.50	34	B −92	424	88	53	b	
	15		2.00	33	B −101	490	75	50		
	16		1.50	32	B −114	569	62	56		55
7–14	13	M	2.50	28	A −32	465	72	62	d	
	14		2.00	29	A −37	529	59	59		
	14		1.79	27	A −38	562	56	58		
	16	T	1.72	87	D 17	477	73	48	c	
	16		1.64	90	D 16	486	70	45		
	16		1.50	91	D 13	512	64	47		51
7–15	13	M	2.49	35	A −29	455	71	64	d	
	14		2.00	31	A −29	518	64	55		
	14		1.79	31	A −31	546	59	55		
	15	T	2.50	99	D 35	352	107	47	c	
	15		2.00	103	D 35	420	92	49		
	16		1.50	99	D 28	501	75	46		51
7–16	13	M	2.49	12	A −45	513	67	70	d	
	14		1.99	11	A −46	577	58	62		
	15		1.49	11	A −41	643	50	61		64
7–17	13	M	2.50	15	A −42	493	68	47	d	
	14		2.00	14	A −44	557	59	46		
	14		1.79	14	A −47	580	44	34		42
7–18	13	M	2.19	19	A −29	513	73	48	a	
	14		2.01	19	A −26	535	71	49		
	14		1.79	17	A −30	572	65	50		49
7–19	13	M	2.49	22	A −43	487	64	53	c	
	14		2.00	20	A −41	546	59	47		
	14		1.79	19	A −46	586	53	55		
	15	T	2.50	108	D 60	319	135	32	d	
	16		2.00	110	D 63	391	122	37		
	16		1.50	109	D 58	473	101	45		47
			Long method					41		
7–20	13	M	2.49	18	A −38	494	71	60	c	
	14		2.00	18	A −40	555	60	57		
	14		1.79	17	A −43	584	56	54		
	15	T	2.50	25	A −5	432	100	52	b	
	16		2.00	24	A −8	497	86	49		
	16		1.50	32	B −80	557	72	44		51
7–26	14	M	1.79	26	A −19	552	69	49	d	
	15		1.62	20	A −27	593	59	55		
	15		1.48	19	A −28	613	56	56		
	19	T	1.05	56	C −28	609	65	50	c	
	19		1.04	57	C −39	610	61	49		
	20		1.04	54	C −35	611	62	49		51
7–27	13	M	2.50	22	A −40	484	67	57	d	
	14		2.00	21	A −41	546	58	57		
	14		1.79	21	A −44	577	53	57		57

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1941—Continued										
7–28	14	M	2.50	18	A −44	502	64	70	d	
	14		2.00	18	A −46	558	56	58		
	15		1.79	18	A −50	587	51	57		62
7–29	14	M	2.00	11	A −49	578	56	54	d	
	14		1.79	11	A −47	607	54	59		
	15		1.49	10	A −46	646	47	52		
	15	T	2.50	157	D 48	325	90	67	d	
	16		2.00	166	D 56	387	85	61		
	16		1.50	172	D 73	451	88	51		57
7–30	15	T	2.50	105	D 18	365	79	49	c	
	16		2.00	104	D 16	434	69	50		
	16		1.50	97	D 12	514	60	46		48
			Long method					47		
7–31	13	M	2.20	36	A −19	480	74	47	d	
	14		1.99	39	A −18	503	69	49		
	14		1.78	42	A −13	533	67	55		50
8– 1	13	M	2.49	30	A −12	451	90	57	c	
	14		1.99	36	A −4	506	81	55		
	15		1.49	42	A −2	572	64	52		
	16	T	1.60	33	B −37	539	87	49	c	
	17		1.50	31	B −50	555	80	44		
	17		1.45	32	B −52	564	78	47		51
8– 2	13	M	2.49	32	A −21	455	80	52	c	
	14		1.99	29	A −27	525	67	52		
	15		1.49	38	A −11	588	59	49		
			Long method					61		
	15	T	2.50	14	A −24	467	85	54	b	
	16		1.99	14	A −25	532	75	53		
	17		1.50	15	A −27	598	64	49		52
8– 3	16	M	1.37	40	A −3	599	60	58	c	
	16		1.35	39	A −4	605	59	59		
	16		1.33	34	A −11	615	55	60		59
8– 4	13	M	2.49	36	A −22	451	77	60	c	
	14		1.99	34	A −26	514	65	54		
	15		1.49	36	A −25	593	52	65		
	15	T	2.49	85	D 37	351	117	31	p	
	16		2.00	64	C −20	442	94	40		
	17		1.50	64	C −27	517	78	36		60
8– 5	14	M	1.66	39	A −17	558	60	59	c	
	15		1.57	39	A −14	570	59	55		
	15		1.49	39	A −16	583	57	57		57
8– 6	13	M	2.49	33	A −31	456	71	57	c	
	14		1.99	28	A −33	529	62	57		
	15		1.49	26	A −35	601	49	50		55
8– 7	13	M	2.49	24	A −41	484	66	67	c	
	14		1.98	24	A −41	544	58	58		
	14		1.78	23	A −43	565	53	51		59
8–11	13	M	2.48	40	A −33	454	65	66	d	
	13		2.00	40	A −34	508	56	54		
	15		1.47	31	A −39	599	45	51		
	18	T	1.21	78	D 23	559	69	47	c	
	18		1.18	70	C −32	565	67	40		
	18		1.15	75	C −34	572	66	44		48
8–12	15	T	2.50	58	C −23	380	103	40	d	
	16		2.00	69	C −9	438	101	48		
	17		1.50	89	D 54	479	105	46		45
8–13	15	T	2.50	113	D 55	321	126	35	d	
	16		2.00	113	D 54	396	110	38		
	17		1.50	121	D 57	458	105	30		34
8–14	13	M	2.48	14	A −38	493	73	49	c	
	13		2.00	12	A −40	561	63	47		
	15		1.49	9	A −43	645	50	55		50
8–15	13	M	2.49	25	A −26	466	79	55	c	
	13		2.00	23	A −30	538	66	60		
	15		1.49	25	A −26	609	55	62		59
8–16	13	M	2.49	10	A −42	520	70	62	d	
	13		1.98	11	A −40	577	63	57		
	15		1.49	9	A −44	654	49	62		60
			Long method					75		
8–17	17	T	1.33	117	D 45	518	78	52	d	
	18		1.27	115	D 39	535	73	50		
	18		1.23	135	D 63	516	86	47		50
8–18	13	M	1.99	83	C 63	445	124	57	d	
	14		1.77	80	C 64	477	113	52		
	14		1.49	80	C 62	522	97	40		50
8–19	15	T	2.53	52	C −55	403	79	49	b	
	16		2.20	51	C −56	445	73	44		
	16		2.00	51	C −56	471	70	47		47
1941—Continued										
8–20	15	T	2.50	85	D 9	376	78	42	c	
	16		2.00	80	D 6	450	69	49		
	17		1.50	75	D 1	525	58	49		47
8–21	15	T	2.50	37	B −103	422	84	43	b	
	16		2.00	40	B −108	483	74	47		
	17		1.50	43	B −119	553	63	52		47
8–23	13	M	2.50	14	A −34	492	77	48	p	
	14		1.45	12	A −35	643	53	59		
	15		1.35	13	A −39	658	48	54		
	15	T	2.50	39	B −84	408	92	37	d	
	16		2.00	40	8 −94	481	79	52		
	17		1.50	48	C −33	538	73	41		43
			Long method					47		
8–24	15	T	2.51	62	C −35	380	95	39	c	
	16		2.00	67	C −27	444	90	46		
	16		1.80	68	C −29	472	85	47		44
8–25	15	T	2.48	94	D 18	360	85	46	c	
	16		2.00	94	D 15	437	73	49		
	17		1.50	95	D 14	510	62	46		47
8–26	12	M	2.49	56	B 19	416	99	51	d	
	13		1.98	46	B 8	490	80	41		
	13		1.47	44	A 0	567	64	46		
	15	T	2.49	83	D 20	369	95	47	c	
	16		2.00	82	D 22	439	87	50		
	17		1.50	88	D 27	509	72	48		47
8–27	14	M	1.78	54	8 1	520	66	51	d	
	15		1.61	53	B 5	534	62	37		
	15		1.48	56	8 11	551	62	42		
	15	T	2.50	51	C −51	406	82	46	b	
	16		2.00	53	C −54	460	71	48		
	17		1.50	53	C −56	541	62	49		
	15	Ty	2.50	83	55	366	113	55	c	
	15		2.00	83	54	438	97	55		
	16		1.50	92	55	519	80	56		48
			Long method					46		
8–29	13	M	2.47	37	A −8	439	89	40	d	
	13		1.97	41	A 3	496	83	42		
	14		1.48	34	A −18	591	57	53		45
			Long method					48		
8–30	13	M	2.49	46	8 12	430	86	51	d	
	13		1.99	40	A −16	502	70	55		
	14		1.48	37	A −21	586	54	52		
	15	T	2.50	13	A −14	466	99	47	d	
	16		1.99	16	A −17	525	85	61		
	17		1.50	35	B −46	548	82	53		53
8–31	12	M	2.48	14	A −46	495	66	46	c	
	13		1.99	13	A −45	561	58	48		
	14		1.49	11	A −42	632	49	48		47
9– 1	12	M	2.47	20	A −29	474	78	47	b	
	13		2.00	19	A −32	542	67	53		
	14		1.49	20	A −32	613	53	54		
	15	T	2.50	42	B −84	413	94	50	c	
	16		2.00	46	B −94	472	81	54		
	17		1.50	45	B −95	548	70	60		52
			Long method					61		
9– 2	12	M	2.49	32	A −20	462	81	67	c	
	13		1.99	28	A −25	529	68	63		
	14		1.49	28	A −27	599	54	58		
	15	T	2.50	78	D 49	363	135	69	d	
	16		2.00	86	D 55	424	124	59		
	17		1.50	99	D 50	501	98	63		63
9– 3	12	M	2.48	21	A −21	475	85	53	b	
	13		1.99	19	A −28	549	70	60		
	14		1.48	17	A −27	620	57	53		
			Long method					61		
	15	T	2.50	68	C 30	356	142	50	d	
	16		2.01	63	C 20	432	118	48		54
9– 4	12	M	2.50	18	A −18	478	89	56	b	
	13		1.99	18	A −20	545	76	58		
	14		1.49	15	A −24	628	59	63		
	15	T	2.51	77	D 53	356	144	60	c	
	16		1.99	78	D 54	427	127	55		
	17		1.50	68	C 25	508	106	63		59
9– 5	12	M	2.49	19	A −25	482	83	58	c	
	13		1.98	15	A −32	554	68	53		
	14		1.49	15	A −30	618	55	46		
	15	T	2.50	70	C −6	366	117	39	c	
	16		2.00	73	C −5	433	104	46		
	17		1.49	79	D 61	486	116	33		46
1941—Continued										
9– 6	12	M	2.48	14	A −43	497	68	49	a	
	13		1.99	13	A −44	560	59	48		
	14		1.49	12	A −45	632	47	48		
	15	T	2.49	70	C 47	335	153	22	p	
	16		2.00	68	C 23	423	121	37		
	17		1.50	67	C 8	500	97	33		48
9– 7	12	M	2.49	15	A −27	489	82	53	d	
	13		1.98	15	A −29	545	70	43		
	13		1.73	15	A −30	582	62	41		
	15	T	2.48	29	8 −44	426	108	51	b	
	16		2.00	31	B −33	483	99	49		
	17		1.50	29	B −47	557	81	48		48
9– 8	15	T	2.20	39	B 101	378	169	55	d	
	16		2.00	38	B 105	455	150	58		
	16		1.80	38	8 80	486	134	60		58
9– 9	16	T	2.48	45	B −39	400	113	46	d	
	16		2.00	44	B −54	469	95	53		
	17		1.48	48	B −98	545	72	52		
			Long method					59		
	15	Ty	2.49	80	72	351	154	64	d	
	15		2.00	82	73	421	131	61		
	16		1.87	86	74	439	126	58		55
9–10	12	M	2.48	29	A −23	466	81	61	b	
	13		1.98	29	A −23	530	70	61		
	14		1.49	26	A −22	600	57	52		
	16	T	2.49	22	A −25	455	78	52	b	
	16		2.00	21	A −26	519	69	56		
	17		1.50	21	A −32	585	56	51		
	15	Ty	2.50	69	60	357	139	37	d	
	15		2.00	67	59	431	120	40		
	16		1.80	67	57	462	109	43		55
9–11	12	M	2.48	14	A −32	502	73	52	d	
	13		1.98	14	A −34	550	62	36		
	14		1.49	14	A −28	627	54	48		45
9–12	12	M	2.47	20	A −27	481	80	56	d	
	13		1.99	17	A −31	537	68	48		
	14		1.49	17	A −32	623	54	59		54
9–13	13	M	1.98	19	A −20	538	76	54	d	
	14		1.49	19	A −23	608	59	48		51
9–14	17	T	1.73	46	C 18	494	106	51	c	
	17		1.50	46	C 13	529	97	52		52
9–15	16	T	2.51	44	B −102	410	88	48	c	
	16		2.00	42	8 −87	476	82	54		
	17		1.50	44	8 −82	542	74	50		51
9–16	16	T	2.50	37	B −86	416	91	44	c	
	16		2.00	40	B −94	481	79	48		
	17		1.50	46	8 −74	538	76	54		49
9–17	17	M	1.11	12	A −36	691	48	52	d	
	17		1.12	11	A −37	684	49	47		
	17		1.14	11	A −37	684	49	47		
	16	T	2.50	65	C −44	426	89	45	d	
	16		2.00	52	C −54	506	72	52		
	17		1.50	53	C −56	573	62	49		50
			Long method					44		
9–18	14	M	1.29	15	A −37	654	53	50	c	
	15		1.21	16	A −35	662	51	45		
	15		1.17	16	A −37	668	49	48		
	17	T	1.64	23	A −29	560	60	50	d	
	17		1.58	23	A −29	572	59	54		
	17		1.50	23	A −31	582	56	50		49
9–19	12	M	2.50	32	A 26	434	123	55	d	
	13		2.00	30	A 20	506	102	57		
	16	T	2.20	43	C −56	457	72	52	c	
	16		1.97	45	C −56	486	68	51		
	17		1.48	46	C −65	554	56	51		53
9–20	13	M	2.00	43	A 17	489	97	53	c	
	14		1.50	41	A 20	569	78	54		
	16	T	2.50	11	A −28	479	83	47	b	
	16		2.00	12	A −29	536	73	48		
	17		1.50	17	A −29	595	61	52		51
9–21	16	T	2.50	38	B 108	369	173	43	d	
	16		2.00	46	B 113	423	155	38		40
9–22	12	M	2.19	38	A −4	486	85	67	p	
	13		2.00	37	A −7	511	78	67		
	13		1.50	34	A −14	592	59	64		
	16	T	2.50	29	8 −41	414	109	40	d	
	16		2.00	30	8 −29	480	100	45		
	17		1.50	18	A −7	571	78	39		41

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.	Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1941—Continued									
9-23 16	T	2.50	37	B −22	401	118	44	c	
16		2.00	36	B −20	467	105	40		
17		1.50	40	B −10	531	95	38		41
9-24 15	Ty	2.50	49	28	407	95	45	c	
16		2.00	45	25	475	81	41		
16		1.80	49	28	493	76	37		41
9-25 15	Ty	2.50	49	39	389	118	33	c	
16		2.00	48	36	463	97	40		
16		1.81	47	34	492	89	33		35
9-26 16	Ty	2.50	80	53	367	113	42	c	
17		2.00	92	57	429	98	46		44
		Long method					33		
9-27 16	T	2.50	36	B 2	393	128	32	c	
16		2.00	36	B −6	462	110	34		
17		1.50	39	B −20	536	91	42		36
9-28 16	T	2.49	83	D 54	342	141	37	d	
17		1.50	87	D 55	486	108	44		40
9-29 12	M	2.50	49	B 12	423	96	51	d	
12		1.99	48	B 8	492	80	54		
13		1.50	45	B 2	566	61	47		
		Long method					60		
16	T	2.49	58	C −21	387	104	42	c	
16		2.00	55	C −26	456	89	43		
17		1.49	55	C −41	539	70	50		47
		Long method					53		
9-30 16	T	2.49	41	D −4	391	124	42	c	
16		2.01	43	D −30	465	103	49		
17		1.50	37	D −58	547	79	44		45
10- 1 12	M	2.20	107	C −3	399	100	40	c	
12		2.00	109	C −4	431	93	49		
13		1.50	100	C −3	514	74	44		
16	T	2.00	29	B −76	494	86	48	b	
17		1.80	26	B −72	526	80	49		
17		1.50	28	B −62	563	76	49		47
10- 2 12	M	2.49	65	B 29	413	105	64	d	
12		2.00	62	B 20	482	85	64		
13		1.50	60	B 14	552	64	49		59
10- 3 12	M	2.50	36	A 15	431	111	51	c	
12		2.00	33	A 6	508	90	56		
13		1.50	30	A 0	592	70	58		55
		Long method					58		
10- 4 12	M	2.50	29	A 8	446	109	54	d	
12		2.00	28	A 3	520	90	63		
13		1.50	23	A −11	598	65	53		57
10- 5 15	Ty	2.19	50	57	426	144	53	p	
16		2.00	47	45	466	114	56		
16		1.78	52	53	486	114	55		55
10- 6 12	M	2.49	40	A 6	424	101	42	p	
12		2.01	39	A 3	487	85	43		
13		1.49	39	A 1	583	67	67		
16	T	2.51	32	B −52	415	104	47	d	
16		2.00	32	B −55	488	91	51		
17		1.72	32	B −60	531	82	60		
15	Ty	2.50	50	38	402	115	55	d	
15		2.20	49	36	441	102	55		
16		2.00	50	37	473	97	60		55
10- 7 12	M	2.49	23	A −17	469	87	54	p	
12		2.00	23	A −22	541	72	68		
13		1.50	23	A −24	601	57	53		
16	T	2.50	30	B −54	424	103	51	b	
17		2.00	31	B −61	496	89	57		
17		1.50	30	B −57	563	78	53		
15	Ty	2.49	26	12	450	87	53	c	
16		2.20	26	11	490	78	58		
16		2.00	23	8	518	71	48		54
10- 8 12	M	2.50	27	A −20	450	84	38	p	
12		2.00	26	A −23	527	70	53		
13		1.50	22	A −27	608	55	52		
		Long method					70		
16	T	2.47	17	A 19	453	132	63	c	
17		2.00	16	A 25	504	125	49		
17		1.50	19	A 7	578	91	53		
15	Ty	2.50	31	10	443	79	53	c	
16		2.01	30	11	505	69	52		
17		1.49	44	18	565	57	50		53
		Long method					48		
10- 9 12	M	2.50	25	A 2	456	104	61	p	
12		2.00	26	A −4	514	85	45		
13		1.50	24	A −16	584	62	37		
1941—Continued									
10- 9 16	T	2.49	46	B 60	371	154	40	c	
17		2.00	43	B 37	450	127	42		
17		1.50	42	B 8	527	101	42		
		Long method					49		
18	Ty	1.31	41	18	596	55	51	d	
19		1.30	42	18	599	54	56		46
10-12 12	M	2.49	44	A 14	418	107	43	d	
12		2.00	43	A 9	490	88	53		
13		1.49	40	A 2	567	67	50		49
10-13 12	M	2.50	35	A 34	433	128	60	p	
12		2.00	35	A 32	499	109	57		
13		1.50	33	A 33	568	89	43		
10-14 12	M	2.50	47	B 90	398	184	59	p	
12		2.00	48	B 82	461	147	48		
13		1.49	41	B 55	561	98	47		
22	Ty	1.90	39	20	504	74	56	d	
22		2.02	42	22	482	78	53		
22		2.15	36	18	471	79	53		54
10-15 15	Ty	2.52	65	39	385	101	49	b	
16		2.20	64	38	428	91	50		
16		2.00	63	38	456	86	49		49
10-16 12	M	2.50	38	A 43	428	135	53	d	
12		2.00	37	A 34	493	110	49		
13		1.50	35	A 21	576	80	55		
		Long method					70		
15	Ty	2.50	74	38	390	87	48	b	
15		2.21	71	37	430	81	51		
16		2.00	71	37	460	76	52		50
10-17 12	M	2.50	31	A 31	436	128	55	b	
12		2.00	30	A 21	505	103	52		
13		1.50	25	A 9	589	77	51		
16	Ty	1.77	49	24	513	68	50	c	
17		1.70	48	23	524	67	46		
17		1.64	50	24	530	65	47		52
10-18 12	M	2.50	35	A 75	414	168	44	d	
12		1.99	34	A 69	485	137	40		
13		1.50	34	A 70	551	109	25		36
10-19 16	Ty	2.50	93	52	373	95	53	d	
17		2.01	90	56	436	92	54		54
10-20 12	M	2.49	35	A 30	422	125	36	d	
12		2.00	28	A 15	497	99	39		
13		1.34	23	A 12	623	59	48		41
10-21 12	M	2.50	63	B 97	368	182	50	d	
12		2.00	65	B 100	435	156	47		
13		1.50	68	B 124	511	139	55		51
10-22 15	M	1.12	96	C 325	540	170	53	d	
15		1.08	91	C 287	556	152	52		
15		1.06	87	C 267	565	142	48		51
10-23 12	M	1.96	116	C 64	419	130	53	d	
12		1.80	116	C 67	440	124	52		
13		1.50	116	C 76	495	109	57		54
10-24 12	M	2.50	79	C 6	387	105	54	c	
12		2.01	80	C 1	455	89	55		
13		1.50	74	B 28	537	70	47		52
		Long method					60		
10-25 12	M	2.50	67	B 32	395	108	55	c	
12		2.00	63	B 26	466	89	46		
13		1.50	58	B 17	550	67	47		49
10-26 15	M	1.06	55	B 25	624	54	43	d	
15		1.04	57	B 20	633	50	49		46
10-29 12	M	2.50	48	B 11	422	95	44	b	
12		2.00	45	A 3	486	83	42		
13		1.50	44	A −3	567	66	50		45
		Long method					40		
10-30 12	M	2.20	79	C 48	418	124	57	c	
12		2.00	79	C 43	446	112	56		
13		1.50	72	B 49	521	85	49		
16	T	2.50	33	B −101	432	84	45	b	
18		1.80	34	B −114	524	67	45		
19		1.51	34	B −117	562	61	46		48
10-31 15	M	1.11	43	A 25	628	61	47	d	
15		1.07	54	B 55	630	70	63		
15		1.04	46	B 44	640	64	50		
19	Ty	1.47	32	21	573	71	42	d	
19		1.46	29	19	582	70	48		
19		1.45	30	18	577	69	43		48
11- 1 12	M	2.50	75	B 65	383	140	63	d	
12		2.00	71	B 59	454	116	60		
13		1.50	62	B 49	540	89	56		
1941—Continued									
11- 1 16	Ty	2.23	51	23	454	78	56	c	
16		2.01	48	22	484	72	47		
17		1.82	44	19	514	66	47		53
11- 2 13	M	2.20	70	B 48	431	114	57	c	
13		1.80	66	B 53	489	96	55		
14		1.50	70	B 51	537	87	55		
17	T	2.00	120	D 23	430	68	58	c	
18		1.78	124	D 21	459	62	56		
18		1.66	126	D 20	477	69	60		57
11- 3 12	M	2.50	56	B 47	403	130	61	c	
12		2.01	55	B 44	468	109	50		
13		1.49	48	B 33	557	81	52		
17	T	2.20	105	D 15	413	71	54	c	
17		1.99	105	D 13	439	65	50		
18		1.78	99	D 8	474	60	47		52
11- 4 12	M	2.49	45	A 22	423	112	51	b	
12		2.00	42	A 21	491	98	56		
13		1.50	40	A 17	571	76	56		54
11- 5 16	T	2.50	86	D 10	384	79	55	c	
17		2.20	86	D 10	423	74	46		
17		2.00	85	D 9	454	69	55		
		Long method					78		
16	Ty	2.50	67	38	389	95	47	b	
16		2.00	69	41	453	86	47		
18		1.53	67	43	525	78	52		50
		Long method					51		
11- 6 16	T	2.51	79	D 8	381	80	56	c	
17		2.17	77	D 5	435	72	50		
17		2.00	75	C −50	458	71	54		
16	Ty	2.51	73	37	392	88	59	c	
16		2.21	69	36	434	82	68		
16		2.01	70	38	462	78	60		57
11- 7 16	Ty	2.49	47	27	411	94	45	b	
16		2.20	44	24	454	85	45		
17		2.00	41	22	486	80	43		44
11- 8 12	M	2.50	23	A 22	447	123	49	c	
12		2.00	22	A 12	522	99	52		
13		1.50	18	A 6	605	77	56		
17	T	2.50	79	D 9	387	82	54	c	
17		2.19	81	D 10	428	77	46		
17		2.00	82	D 11	451	74	52		
16	Ty	2.49	34	15	433	85	41	b	
16		2.21	35	16	468	79	43		
17		2.00	36	17	496	75	48		48
11- 9 12	M	2.49	44	A 96	389	183	32	p	
12		2.00	42	A 90	466	151	33		
12		1.75	40	A 87	508	134	33		
17	T	2.50	61	C −53	404	83	48	c	
17		2.20	64	C −55	439	77	48		
17		2.00	55	C −52	474	73	56		51
11-10 17	T	2.48	40	B −72	413	99	47	c	
17		2.19	41	B −65	448	95	44		
17		2.00	40	B −69	480	88	50		
16	Ty	2.49	39	19	433	88	60	c	
16		2.21	38	20	466	84	50		
17		2.01	39	22	487	81	47		49
11-11 13	M	2.49	48	B 84	389	177	35	c	
13		2.01	46	B 81	462	149	42		
13		1.50	46	B 78	542	114	42		
		Long method					46		
16	Ty	2.50	68	56	364	132	36	c	
16		2.20	71	58	402	123	36		
17		2.00	70	59	429	117	34		38
		Long method					38		
11-12 11	M	2.50	11	A −14	496	97	51	b	
12		2.00	10	A −19	559	80	54		
13		1.50	9	A −21	634	63	55		53
11-14 17	T	2.19	104	D 13	415	70	53	d	
18		2.00	101	D 13	444	67	51		
16	Ty	2.50	103	62	348	121	44	d	
16		2.21	106	61	389	111	44		
17		2.00	97	59	423	101	47		48
11-15 16	T	2.51	40	B −120	429	78	52	b	
17		2.21	40	B −128	468	71	55		
18		2.00	38	B −127	496	67	55		
16	Ty	2.51	33	16	429	87	39	b	
16		2.21	35	18	464	82	40		
17		2.00	35	18	491	77	37		49

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1941—Continued											
11–16	12	M	2.20	32	A	18	470	107	42	c	
	12		2.00	31	A	17	499	99	44		
	13		1.50	29	A	3	583	72	48		
	16	Ty	2.50	35		21	426	96	45	b	
	16		2.16	37		23	463	90	40		
	17		2.00	40		25	483	85	45		44
11–17	11	M	2.50	23	A	4	452	107	43	b	
	12		2.00	22	A	−3	522	88	43		
	13		1.50	20	A	−6	600	69	45		44
			Long method						48		
11–18	17	T	2.51	8	A	−35	496	78	56	d	
	17		2.20	9	A	−37	528	71	49		52
11–19	11	M	2.49	19	A	20	453	124	37	d	
	12		2.00	18	A	13	525	101	46		
	13		1.50	17	A	6	608	77	54		
	16	T	2.50	10	A	−19	486	95	60	b	
	17		2.00	11	A	−20	534	82	61		
	17		1.80	12	A	−16	564	81	59		55
			Long method						38		
11–20	11	M	2.51	17	A	12	461	117	50	d	
	12		2.00	16	A	2	538	93	52		
	13		1.50	14	A	−11	619	68	55		
	17	T	2.50	30	B	−85	427	90	43	c	
	17		2.20	28	B	−76	469	87	49		
	18		2.00	26	B	−72	497	84	50		48
11–21	11	M	2.50	23	A	7	462	110	62	c	
	12		2.00	18	A	−5	540	87	61		
	13		1.50	17	A	−4	610	71	57		
	17	T	2.50	16	A	−27	469	81	57	b	
	17		2.20	18	A	−26	503	75	53		
	18		2.00	20	A	−27	525	69	53		56
11–22	11	M	2.50	10	A	−21	502	90	48	b	
	12		2.00	7	A	−25	573	76	52		
	13		1.50	5	A	−29	647	59	50		
			Long method						56		
	17	T	2.50	27	B	−37	436	111	65	c	
	17		2.20	26	B	−38	470	101	53		
	18		2.00	26	B	−41	501	95	54		52
11–23	11	M	2.49	15	A	−11	483	97	52	b	
	12		2.00	13	A	−17	550	80	52		
	13		1.50	12	A	−22	626	62	55		
	17	T	2.50	12	A	−22	479	90	59	b	
	17		2.21	13	A	−21	514	84	53		
	18		2.00	12	A	−24	540	78	54		
	16	Ty	2.50	6		12	496	109	48	b	
	17		2.20	8		13	527	102	46		
	17		2.00	8		13	557	95	47		52
			Long method						51		
11–25	11	M	2.50	31	A	60	421	154	44	c	
	12		2.00	30	A	49	496	125	45		
	13		1.50	26	A	38	581	94	49		
	17	Ty	2.49	17		10	468	93	46	a	
	18		2.20	16		10	504	85	46		
	18		2.00	16		10	533	80	47		46
11–26	11	M	2.49	33	A	81	415	175	43	d	
	12		2.01	32	A	80	487	149	42		42
11–27	11	M	2.51	32	A	100	409	194	45	p	
	12		2.01	29	A	80	489	150	43		
	13		1.50	26	A	66	588	109	62		
	16	Ty	2.50	30		12	444	84	44	b	
	17		2.20	30		13	478	79	48		
	17		2.00	32		14	503	74	44		45
11–28	11	M	2.50	64	B	89	371	169	54	c	
	12		2.01	60	B	78	449	136	55		
	13		1.50	63	B	92	524	114	55		55
11–29	11	M	2.50	57	B	110	366	200	39	d	
	12		2.01	58	B	110	435	169	44		
	13		1.50	55	B	100	529	126	48		44
			Long method						34		
11–30	11	M	2.50	56	B	102	371	193	46	d	
	12		2.01	52	B	73	457	138	44		
	13		1.50	40	A	62	554	103	39		
	21	Ty	2.10	86		68	394	124	32	d	
	21		2.20	84		66	380	126	30		
	22		2.53	81		62	344	130	40		39
12– 1	17	T	2.49	46	C	−53	418	79	54	c	
	18		2.20	47	C	−59	458	72	47		
	18		2.00	47	C	−54	482	71	49		
1941—Continued											
12– 1	16	Ty	2.50	72		45	387	104	52	d	
	17		2.20	67		41	431	94	50		
	17		2.00	60		35	466	84	46		50
			Long method						55		
12– 2	16	Ty	2.50	35		22	421	97	46	c	
	17		2.20	38		28	455	98	40		
	17		2.00	39		29	480	94	39		42
12– 3	11	M	2.50	48	B	43	410	129	53	d	
	12		2.00	45	A	39	485	110	60		
	13		1.50	43	A	31	562	84	51		55
12– 4	12	M	2.51	82	C	176	326	223	45	d	
	12		2.00	78	C	172	410	184	46		
	13		1.50	81	C	194	492	156	51		47
12– 5	12	M	2.51	106	C	133	331	202	60	d	
	12		1.69	98	C	138	464	147	55		
	13		1.50	96	C	128	499	129	58		
	17	T	2.50	23	A	−25	455	76	58	c	
	18		2.21	24	A	−25	489	72	59		
	18		2.00	22	A	−26	515	68	47		56
			Long method						43		
12– 6	12	M	2.50	79	C	173	343	219	67	d	
	12		2.00	82	C	165	416	181	55		
	12		1.74	81	C	167	454	163	49		57
12– 7	12	M	2.50	44	A	40	418	130	51	c	
	12		2.01	41	A	23	491	99	55		
	13		1.50	41	A	18	571	76	55		
	17	T	2.50	12	A	−30	477	81	48	b	
	18		2.20	13	A	−29	511	76	48		
	18		2.00	14	A	−26	533	74	49		50
12– 8	12	M	2.50	43	A	33	414	123	41	b	
	12		2.01	41	A	24	491	100	52		
	13		1.50	44	A	30	559	83	43		
			Long method						45		
	17	Ty	2.50	33		22	428	98	49	c	
	17		2.20	35		21	471	87	54		
	18		2.00	36		22	493	84	51		47
12– 9	12	M	2.51	44	A	36	414	127	48	d	
	12		2.00	42	A	25	492	101	53		
	13		1.50	35	A	13	581	75	60		54
12–10	12	M	2.49	49	A	52	407	140	53	c	
	12		2.00	45	A	45	477	115	52		
	13		1.66	47	A	45	526	99	48		51
12–11	12	M	2.50	43	A	16	424	108	49	c	
	12		2.01	42	A	6	493	86	56		
	13		1.50	41	A	11	566	72	52		52
12–12	12	M	2.50	24	A	−8	454	95	58	c	
	12		2.01	22	A	−16	525	78	59		
	13		1.50	20	A	−18	605	62	54		57
12–13	12	M	2.51	40	A	5	424	99	50	d	
	12		2.00	39	A	−1	499	82	56		
	13		1.50	38	A	2	573	67	42		49
12–14	12	M	2.50	60	B	24	400	103	36	d	
	12		2.00	56	B	19	468	86	37		
	13		1.50	54	B	17	549	68	43		39
12–17	17	T	2.50	20	A	−11	452	96	56	b	
	18		2.20	22	A	−13	489	86	57		
	18		2.00	23	A	−14	512	80	57		57
12–18	17	Ty	2.51	15		5	474	85	44	b	
	17		2.20	14		5	511	79	40		
	18		2.00	16		7	534	76	42		42
12–19	17	T	2.49	44	B	−85	415	95	57	b	
	18		2.20	44	B	−85	453	88	56		
	19		2.00	44	B	−93	479	81	55		
	17	Ty	2.51	31		16	438	89	48	b	
	17		2.20	29		15	473	82	42		
	18		1.99	30		15	507	77	46		51
			Long method						57		
12–22	13	M	1.36	112	C	222	497	159	54	d	
	14		1.23	104	C	190	531	134	51		
	14		1.16	106	C	187	551	126	60		55
12–23	14	M	1.14	125	C	260	529	152	54	p	
	15		1.09	128	C	290	531	158	42		
12–24	12	M	2.50	175	C	279	243	315	47	d	
	12		2.00	179	C	255	334	251	56		
	13		1.50	181	C	262	420	203	48		50
12–26	14	M	1.15	184	C	11	536	73	52	p	
	15		1.04	184	C	49	551	77	50		
1941—Continued											
12–27	12	M	2.51	115	C	3	362	114	61	d	
	12		2.00	107	C	−5	436	93	53		
	13		1.71	101	C	−7	483	80	54		56
12–28	12	M	2.51	124	C	72	347	163	78	p	
	12		2.00	118	C	64	414	133	59		
	13		1.50	113	C	68	495	106	53		63
12–29	12	M	2.50	102	C	118	339	190	60	d	
	12		2.00	96	C	112	415	155	59		
	13		1.49	91	C	82	507	107	53		
			Long method						46		
	18	Ty	1.85	77		47	472	83	52	d	
	19		1.81	77		46	481	81	58		
	19		1.80	72		42	488	79	58		56
12–30	12	M	2.50	75	C	98	366	168	59	d	
	12		2.00	78	C	118	429	154	57		
	13		1.50	72	B	85	515	109	46		
	17	Ty	2.50	11		4	489	87	50	c	
	18		1.97	14		6	544	76	47		50
			Long method						60		
12–31	12	M	2.51	150	C	319	252	335	55	d	
	12		2.00	152	C	307	339	274	60		
	13		1.50	151	C	300	435	214	54		56
1942											
1– 1	12	M	2.50	111	C	161	324	221	70	d	
	12		2.00	112	C	153	402	181	65		
	13		1.50	106	C	135	490	131	57		64
1– 2	12	M	2.50	144	C	254	277	287	68	d	
	12		2.00	144	C	230	362	229	66		
	13		1.50	136	C	224	456	177	61		65
1– 4	17	Ty	2.49	21		16	456	101	51	c	
	17		2.19	22		16	492	94	48		
	18		1.99	24		19	517	90	57		52
1– 5	12	M	2.50	117	C	274	289	304	62	d	
	12		2.01	120	C	296	359	263	59		
	13		1.60	117	C	317	428	229	50		57
1– 6	12	M	2.50	131	C	230	283	269	51	p	
	12		2.00	131	C	221	360	222	52		
	18	T	2.52	66	C	−58	392	79	43	p	
	18		2.24	64	C	−60	430	74	46		
	18		2.17	65	C	−60	441	72	47		
1– 7	12	M	2.01	120	C	163	387	189	61	d	
	13		1.80	125	C	161	427	172	73		
	13		1.50	124	C	156	474	146	57		
	17	Ty	2.50	73		37	398	88	66	c	
	17		2.16	74		39	444	74	63		
	18		2.00	73		39	463	73	60		63
1– 8	12	M	2.51	80	C	100	357	170	54	d	
	12		2.00	79	C	99	436	143	58		
	13		1.50	71	B	73	526	102	52		
			Long method						61		
	17	Ty	2.50	56		26	414	83	54	b	
	17		2.18	55		26	454	76	54		
	18		1.96	57		27	484	72	58		55
			Long method						52		
1– 9	12	M	2.50	47	B	55	411	144	60	d	
	12		2.00	44	A	54	476	123	43		
	13		1.50	35	A	23	574	82	54		
	18	T	2.48	22	A	−24	454	79	47	b	
	18		2.20	21	A	−25	489	74	46		
	19		2.00	19	A	−27	516	70	43		47
1–10	13	M	1.50	44	A	26	561	81	48	c	
	14		1.36	43	A	27	585	75	48		
	14		1.26	36	A	19	611	68	49		
	18	T	2.49	56	C	−56	409	79	50	b	
	18		2.20	52	C	−55	452	75	52		
	19		2.00	49	C	−53	480	71	55		
			Long method						34		
	17	Ty	2.50	20		5	465	81	42	b	
	17		2.20	20		7	504	77	42		
	18		2.00	18		6	529	72	39		47
1–13	14	M	1.20	71	B	56	584	74	52	p	
	14		1.14	69	B	54	598	69	52		
	17	T	2.48	63	C	−49	397	85	44	c	
	18		2.20	66	C	−48	432	81	48		
	18		1.99	72	C	−53	455	75	42		
	17	Ty	2.49	99		72	343	139	51	d	
	17		2.18	101		73	386	128	49		
	18		2.00	94		70	415	120	48		47

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

1942—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1–14	12	M	2.51	43	A	0	427	93	53	c	
	12		2.00	42	A	—2	499	80	59		
	13		1.50	37	A	—11	576	60	50		54
1–15	12	M	2.50	37	A	14	431	109	51	b	
	12		2.00	36	A	11	499	93	48		
	13		1.50	36	A	13	572	75	48		49
			Long method						33		
1–16	17	Ty	2.50	44		42	399	131	40	c	
	17		2.37	44		42	416	125	38		
	17		2.22	41		38	444	115	45		41
1–17	13	M	1.41	76	C	182	520	142	58	d	
	14		1.30	76	C	197	541	138	62		
	17	T	2.54	23	A	26	412	137	40	c	
	18		2.19	24	A	22	460	123	41		
	18		2.00	22	A	17	487	113	41		47
1–18	17	Ty	2.49	26		30	426	123	36	c	
	17		2.20	29		31	460	114	32		
	17		2.00	31		34	482	110	38		35
1–19	14	M	1.21	115	C	263	517	160	51	d	
	15		1.13	116	C	247	535	146	52		
	15		1.08	126	C	238	546	138	57		
	17	Ty	2.50	80		71	341	152	42	c	
	17		2.20	78		70	384	140	37		
	17		2.00	75		70	419	132	43		45
1–21	14	M	1.21	145	C	233	503	153	50	d	
	15		1.14	141	C	233	518	144	50		
	15		1.09	147	C	230	526	139	49		50
1–23	17	Ty	2.50	54		42	386	118	34	c	
	17		2.20	52		40	429	108	41		
	17		2.00	48		39	459	103	39		38
1–24	17	Ty	2.20	48		37	442	105	46	c	
	17		2.00	51		43	457	108	39		
	18		1.81	45		37	491	97	38		41
1–25	17	Ty	2.50	42		48	387	145	40	c	
	17		2.37	38		37	421	123	40		
	17		2.20	35		36	448	116	38		39
1–27	19	Ty	1.61	41		22	546	69	49	c	
	19		1.60	41		22	549	69	53		
	19		1.59	41		22	547	68	49		50
1–28	14	M	1.43	136	C	122	486	126	57	d	
	14		1.30	131	C	117	515	115	58		
	14		1.22	120	C	129	534	111	55		
	17	T	2.49	20	A	—10	451	97	58	b	
	18		2.20	19	A	—12	489	90	53		
	18		1.99	17	A	—14	518	84	50		55
1–29	14	M	1.40	104	C	117	502	117	46	d	
	14		1.21	106	C	117	539	104	44		
	18	T	2.09	33	B	—90	479	81	47	p	
	18		2.00	38	B	—88	491	81	57		
	18		1.94	37	B	—83	498	81	55		
	19	Ty	1.57	36		40	535	100	45	d	
	19		1.57	37		37	539	95	46		
	20		1.57	32		35	543	97	45		45
1–30	12	M	2.50	156	C	214	268	265	44	d	
	12		2.00	157	C	182	357	206	47		
	13		1.50	148	C	168	454	154	53		
	17	Ty	2.20	20		10	496	82	43	b	
	17		2.00	22		12	518	79	44		
	18		1.80	21		9	554	71	51		46
1–31	12	M	2.51	157	C	144	291	221	56	c	
	12		2.00	160	C	133	370	179	55		
	13		1.50	155	C	139	454	143	50		
	17	Ty	2.00	56		31	471	80	57	c	
	18		1.82	44		23	509	74	56		
	18		1.78	46		26	510	75	55		55
2– 1	12	M	1.99	149	C	7	407	106	54	c	
	13		1.81	149	C	7	436	98	54		
	13		1.50	142	C	9	491	85	55		54
2– 2	12	M	2.50	132	C	110	312	190	51	d	
	12		2.00	137	C	105	383	158	47		
	13		1.51	140	C	102	463	125	35		44
2– 3	12	M	2.50	124	C	147	311	214	54	d	
	12		2.00	117	C	135	390	172	54		
	13		1.50	111	C	124	483	130	53		54
2– 4	12	M	2.48	71	B	71	375	147	48	c	
	12		2.00	65	B	60	450	119	42		
	13		1.50	71	B	63	526	96	45		
			Long method						52		
2– 4	18	Ty	1.60	25		14	564	70	42	b	
	19		1.54	22		12	578	67	43		
	19		1.53	22		11	581	66	45		44
2– 5	12	M	2.49	52	B	56	399	143	48	c	
	13		2.00	48	B	48	469	116	48		
	13		1.50	40	A	30	560	84	45		
	17	Ty	2.21	72		42	430	89	64	c	
	17		2.00	70		41	456	85	58		
	18		1.79	73		41	486	76	55		51
2– 7	12	M	2.20	124	C	167	351	207	57	d	
	13		2.00	124	C	164	383	189	54		
	13		1.50	119	C	144	474	140	48		
	17	T	2.50	35	B	10	411	130	63	c	
	17		2.20	32	B	—13	455	112	53		
	18		2.00	31	B	—19	484	104	55		55
2– 8	19	Ty	1.53	22		20	573	82	39	c	
	19		1.51	19		17	583	79	43		
	19		1.50	21		22	573	83	39		40
2– 9	17	T	2.49	18	A	15	432	113	35	c	
	17		2.19	18	A	16	476	120	45		
	18		2.01	19	A	21	494	119	42		41
2–10	13	M	2.00	168	C	188	351	211	46	d	
	13		1.80	165	C	181	386	190	52		
	13		1.50	161	C	174	444	160	52		50
2–11	17	T	2.50	16	A	56	419	178	47	c	
	18		1.88	17	A	58	506	152	53		
	18		1.71	17	A	56	529	142	54		
	16	Ty	2.50	19		22	449	117	44	c	
	17		2.20	19		23	480	109	34		
	17		2.00	23		27	498	106	34		46
			Long method						60		
2–13	15	M	1.16	114	C	186	535	127	43	d	
	15		1.10	114	C	202	546	127	47		
	15		1.06	116	C	197	555	121	50		47
2–14	13	M	1.69	72	B	93	485	127	51	c	
	13		1.50	72	B	91	518	113	51		
	14		1.38	71	B	89	539	105	48		50
2–15	17	T	2.05	20	A	123	449	227	65	p	
	18		1.95	21	A	129	462	223	66		
	18		1.87	22	A	123	472	211	67		
2–16	12	M	2.20	37	A	24	466	109	51	c	
	13		2.00	35	A	19	497	99	51		
	13		1.50	29	A	6	580	74	50		
	17	T	2.47	13	A	29	439	149	46	d	
	17		2.20	14	A	20	481	127	52		
	17		1.99	15	A	5	506	105	39		49
2–17	12	M	2.50	33	A	23	434	120	51	b	
	13		2.00	31	A	17	505	99	52		
	13		1.50	28	A	6	583	74	47		
			Long method						46		
	18	T	2.50	40	B	272	339	250	52	c	
	18		1.92	42	B	277	425	205	52		50
			Long method						67		
2–18	12	M	2.49	28	A	18	442	117	50	b	
	13		2.00	28	A	16	508	100	48		
	13		1.50	25	A	7	588	75	50		49
2–19	12	M	2.50	46	B	59	409	149	54	c	
	13		2.00	42	A	50	481	120	44		
	13		1.50	36	A	35	564	89	45		
	16	Ty	2.49	44		129	314	319	49	d	
	16		2.20	42		129	362	293	50		
	17		2.01	42		131	389	277	48		48
2–20	12	M	2.50	61	B	79	384	163	59	c	
	13		2.00	57	B	73	456	135	51		
	13		1.50	56	B	67	537	103	51		54
2–21	16	Ty	2.50	30		80	386	230	64	d	
	17		2.00	31		72	461	180	56		
	17		1.85	31		72	481	170	60		60
			Long method						53		
2–22	13	M	1.50	77	C	81	518	105	47	d	
	14		1.36	79	C	77	541	95	51		
	14		1.27	83	C	85	551	92	45		48
2–23	12	M	2.49	104	C	84	341	166	44	c	
	13		2.00	102	C	80	409	139	40		
	13		1.50	102	C	80	494	109	44		43
			Long method						40		
2–24	13	M	2.00	69	B	56	451	114	49	c	
	13		1.73	65	B	50	496	99	47		
	13		1.55	64	B	49	528	90	46		
2–24	18	T	1.71	12	A	45	549	137	46	b	
	18		1.65	10	A	40	561	131	46		
	18		1.61	10	A	41	569	130	42		46
2–25	14	M	1.23	33	A	30	612	73	39	c	
	15		1.14	36	A	33	628	68	42		
	15		1.10	35	A	27	638	63	50		
	17	T	2.49	14	A	1	456	116	52	b	
	17		2.19	14	A	—1	475	105	49		
	17		1.99	13	A	—1	525	101	52		49
2–26	12	M	2.49	46	B	62	402	152	41	d	
	13		2.00	45	B	58	464	127	36		
	14		1.50	47	B	66	542	105	53		43
2–27	12	M	2.50	80	C	174	336	220	54	c	
	13		2.00	79	C	173	412	184	49		
	14		1.50	79	C	164	498	141	49		51
2–28	16	T	2.50	15	A	78	398	210	32	c	
	17		2.19	15	A	77	444	190	37		
	17		2.00	16	A	65	477	166	40		36
3– 1	16	T	2.50	34	B	28	389	136	34	c	
	17		2.15	35	B	38	432	129	32		
	17		2.00	36	B	39	456	126	43		
	17	Ty	2.49	22		46	410	165	36	c	
	17		2.20	23		46	449	150	36		
	17		2.00	24		47	475	140	43		38
3– 2	17	Ty	2.50	16		24	442	123	32	c	
	17		2.21	16		23	478	112	30		
	17		2.00	15		23	506	106	28		30
			Long method						28		
3– 4	16	Ty	2.50	13		97	392	284	56	c	
	16		2.20	14		91	431	247	54		
	16		2.00	15		89	457	227	45		52
3– 6	16	T	2.49	19	A	52	416	173	47	b	
	17		2.20	19	A	48	455	155	47		
	17		2.00	19	A	45	485	144	50		48
3– 7	16	Ty	1.99	22		60	472	167	51	c	
	16		1.80	19		49	515	140	51		
	17		1.51	16		48	567	125	57		53
3– 8	12	M	2.50	42	A	54	401	143	28	d	
	13		2.00	40	A	44	476	116	32		
	14		1.50	38	A	38	561	90	38		
	18	T	1.51	34	B	48	536	111	48	d	
	18		1.47	34	B	62	539	114	44		
	18		1.44	34	B	56	543	112	44		
	15	Ty	2.50	21		45	412	164	28	d	
	16		2.20	22		42	459	143	40		
	16		2.01	22		41	488	132	43		38
3– 9	12	M	2.50	34	A	24	425	120	36	c	
	13		2.00	31	A	19	499	101	43		
	14		1.50	26	A	10	583	77	45		
			Long method						48		
	16	Ty	2.46	23		29	431	126	35	b	
	16		2.00	21		27	498	107	37		
	17		1.50	19		23	578	86	42		39
			Long method						52		
3–10	12	M	2.50	51	B	46	404	130	49	b	
	13		2.00	48	B	39	477	108	51		
	14		1.50	50	B	41	551	87	50		
	16	Ty	2.49	23		20	443	107	45	c	
	16		2.20	22		19	480	99	44		
	16		2.01	21		18	508	92	46		48
3–11	12	M	2.49	66	B	78	375	158	51	c	
	13		2.00	61	B	69	449	129	46		
	14		1.50	57	B	61	534	99	46		48
3–12	12	M	2.50	54	B	58	391	144	44	b	
	13		2.00	56	B	57	459	121	47		
	14		1.50	57	B	57	536	96	45		
	16	T	2.45	24	A	12	438	120	55	d	
	16		2.20	26	A	14	474	113	67		
	17		1.99	25	A	8	502	101	56		48
3–13	12	M	2.49	70	B	81	368	160	43	c	
	13		2.00	64	B	74	443	133	45		
	14		1.50	61	B	70	527	103	41		43
3–14	12	M	2.50	61	B	82	369	166	29	c	
	13		2.01	58	B	76	441	138	33		
	14		1.50	57	B	76	527	108	38		33
			Long method						38		
3–15	13	M	2.00	64	B	88	434	146	37	p	
	13		1.81	64	B	83	466	130	42		
	14		1.48	64	B	84	523	111	47		

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued											
3–16	12	M	2.49	76	C	105	355	172	44	c	
	13		2.00	73	B	92	427	145	40		
	14		1.50	71	B	87	514	112	43		42
3–17	12	M	2.49	62	B	80	368	164	31	c	
	13		2.00	59	B	74	443	135	36		
	14		1.50	57	B	71	527	105	37		
	16	T	2.49	29	B	105	397	170	53	c	
	16		2.19	29	B	96	440	153	50		
	17		1.99	28	B	73	474	136	51		43
3–18	13	M	2.00	46	B	49	470	118	40	c	
	14		1.50	44	A	45	546	93	30		
	16		1.09	45	A	42	623	67	31		34
3–19	12	M	2.50	27	A	—2	446	100	47	c	
	13		2.00	27	A	—8	519	82	56		
	14		1.50	24	A	—7	595	67	53		
	17	T	1.86	16	A	30	518	126	49	d	
	17		1.77	11	A	17	548	112	43		
	17		1.69	12	A	13	561	107	46		50
3–20	12	M	2.50	41	A	33	411	125	34	c	
	13		2.00	43	A	33	476	106	34		
	14		1.50	40	A	28	557	83	36		
			Long method						33		
	16	Ty	2.20	27		61	431	174	43	c	
	16		2.00	29		65	457	168	48		
	16		1.80	28		61	492	151	47		40
3–21	12	M	2.49	59	B	66	375	149	24	p	
	13		2.00	57	B	61	446	124	29		
	14		1.50	56	B	59	528	98	37		
	16	T	2.47	6	A	38	463	165	35	b	
	16		2.20	5	A	37	500	154	35		
	16		2.00	5	A	33	528	142	34		
	15	Ty	2.51	25		79	369	234	32	d	
	16		2.00	26		82	443	202	41		
	16		1.50	25		79	531	161	52		39
			Long method						51		
3–22	16	T	2.50	12	A	10	446	128	34	b	
	16		2.20	11	A	12	484	121	34		
	16		2.00	12	A	14	510	117	40		36
3–23	18	T	1.31	26	A	18	584	91	41	c	
	19		1.28	25	A	17	590	90	44		
	19		1.27	25	A	16	593	89	45		
	15	Ty	2.49	46		41	392	126	35	d	
	15		2.20	44		41	426	117	30		
	16		2.00	48		45	453	113	42		41
3–24	15	Ty	2.50	48		43	387	127	37	c	
	15		2.20	41		40	434	119	39		
	16		2.00	44		42	460	112	40		39
3–25	16	T	2.48	18	A	118	380	261	43	d	
	16		2.20	17	A	112	424	231	36		
	16		2.00	17	A	108	457	210	38		39
3–26	12	M	2.50	59	B	12	414	90	45	c	
	13		1.99	55	B	4	485	74	51		
	14		1.50	53	B	5	456	59	45		
	16	T	2.49	21	A	95	392	227	51	c	
	16		2.21	18	A	92	431	207	48		
	16		2.00	17	A	86	466	187	47		48
3–27	13	M	2.00	50	B	17	481	87	54	c	
	13		1.80	51	B	17	504	80	47		
	14		1.50	43	B	14	558	66	42		
	16	T	2.49	8	A	117	406	270	32	d	
	16		1.99	9	A	112	486	219	44		
	17		1.50	8	A	101	568	169	38		
			Long method						58		
	15	Ty	2.50	15		62	407	210	39	c	
	15		2.20	14		61	452	188	39		
	16		2.00	13		60	483	175	47		45
3–29	16	T	2.51	32	B	88	387	161	47	b	
	16		2.20	32	B	77	430	145	44		
	16		2.00	31	B	76	457	138	41		44
3–30	12	M	2.48	55	B	3	414	82	39	b	
	13		2.03	58	B	5	471	73	51		
	14		1.50	54	B	2	553	58	43		
	16	T	2.49	24	A	30	415	142	54	d	
	16		2.19	25	A	27	454	127	51		
	16		1.99	27	A	27	479	120	48		45
3–31	12	M	2.50	44	A	5	424	92	51	b	
	13		2.00	42	A	2	492	78	55		
	14		1.50	39	A	—2	570	61	54		
1942—Continued											
3–31	16	T	2.20	34	B	26	440	126	49	d	
	16		2.00	34	B	45	460	127	46		
	17		1.50	30	B	44	541	109	44		51
4– 1	12	M	2.48	65	B	41	394	117	44	b	
	13		2.00	56	B	27	469	94	47		
	14		1.50	50	B	21	549	73	41		44
4– 2	12	M	2.49	75	B	57	369	133	35	d	
	13		2.00	82	B	42	439	113	39		
	14		1.50	75	B	59	515	92	33		36
4– 3	14	M	1.39	29	A	—22	599	55	43	c	
	15		1.30	27	A	—29	622	49	43		43
4– 5	12	M	2.49	19	A	—23	465	85	43	b	
	13		2.00	18	A	—24	534	73	50		
	14		1.50	17	A	—30	613	55	48		47
4– 8	15	Ty	2.19	66		84	384	178	51	c	
	15		2.20	62		81	414	166	46		
	16		1.86	63		82	435	159	49		49
4–10	13	M	2.49	74	B	33	390	106	45	c	
	13		2.01	72	B	32	452	91	39		
	14		1.50	77	B	33	539	73	41		42
4–11	13	M	2.21	85	C	26	416	111	52	b	
	13		2.00	85	C	22	446	102	46		
	14		1.50	81	C	38	521	88	45		48
4–12	13	M	2.50	71	B	29	398	103	51	b	
	13		2.00	68	B	26	464	87	47		
	14		1.50	63	B	26	542	71	49		
			Long method						26		
	15	T	2.51	56	C	56	354	158	51	c	
	16		2.00	55	C	53	432	137	53		
	17		1.50	61	C	58	503	121	54		50
4–13	13	M	2.50	50	A	5	420	95	52	c	
	13		2.00	44	A	—4	493	78	54		
	14		1.50	37	A	—7	569	62	46		51
4–14	15	M	1.38	37	A	—21	612	49	51	d	
	15		1.23	29	A	—28	629	47	36		
	16		1.20	39	A	—19	624	48	49		
	14	Ty	2.49	48		57	367	161	30	c	
	15		2.21	49		58	405	146	29		
	15		1.99	48		57	437	136	31		41
4–15	13	M	2.50	17	A	—32	481	77	48	b	
	13		2.00	18	A	—31	537	67	47		
	14		1.50	18	A	—30	600	58	38		
	15	Ty	2.49	39		60	375	177	23	c	
	15		2.00	35		62	441	157	25		
	16		1.49	35		57	528	122	34		39
			Long method						23		
4–16	13	M	2.50	23	A	—16	459	89	46	b	
	13		2.00	21	A	—18	527	76	51		
	14		1.50	19	A	—27	601	57	44		47
4–17	13	M	2.50	30	A	4	437	104	42	b	
	13		2.01	30	A	3	503	89	43		
	14		1.50	29	A	0	580	70	47		
	17	Ty	1.36	65		112	504	170	55	d	
	17		1.32	64		113	511	169	56		
	17		1.28	61		115	522	169	59		47
4–18	13	M	2.50	21	A	—22	468	84	43	b	
	13		2.00	16	A	—28	540	70	41		
	14		1.50	14	A	—25	616	59	45		
			Long method						44		
	15	Ty	2.20	33		93	411	230	59	d	
	15		2.00	35		97	436	221	62		
	15		1.80	35		97	473	204	68		47
4–19	13	M	2.50	13	A	—36	494	74	49	a	
	13		2.00	11	A	—38	559	64	50		
	14		1.50	11	A	—41	625	50	45		
	15	Ty	2.20	56		90	378	201	42	c	
	15		2.01	58		92	407	190	47		
	15		1.80	57		91	439	175	45		47
4–20	13	M	1.80	11	A	—38	585	61	46	b	
	14		1.50	11	A	—36	626	53	48		
	15		1.40	10	A	—39	645	50	42		45
4–22	13	M	2.50	34	A	—10	434	88	39	a	
	13		2.00	34	A	—11	498	76	39		
	14		1.50	33	A	—10	574	62	43		40
4–23	13	M	2.50	17	A	—23	472	85	44	b	
	13		2.00	16	A	—27	540	71	46		
	14		1.50	13	A	—30	620	56	49		46
1942—Continued											
4–24	13	M	2.49	23	A	—17	462	87	42	a	
	13		2.00	22	A	—21	526	74	42		
	14		1.50	23	A	—17	592	61	41		
			Long method						39		
	15	T	2.51	22	A	96	388	228	62	d	
	15		2.00	23	A	93	460	190	62		
	16		1.50	24	A	80	543	176	60		45
4–25	15	Ty	2.47	26		100	371	273	57	d	
	15		2.20	27		99	414	248	60		
	15		2.00	26		96	441	227	55		57
4–27	13	M	2.49	49	B	0	427	82	46	b	
	13		2.01	47	B	—4	489	70	45		
	14		1.50	47	B	—2	564	57	44		45
4–28	13	M	2.20	35	A	—16	475	77	42	c	
	13		2.00	33	A	—19	506	71	45		
	14		1.79	34	A	—19	539	65	51		46
4–29	13	M	2.48	39	A	9	425	104	38	c	
	13		2.00	38	A	13	487	93	39		
	14		1.50	38	A	22	557	80	37		38
4–30	13	M	2.50	31	A	—16	441	85	37	c	
	13		2.00	30	A	—17	512	74	40		
	14		1.50	26	A	—16	586	61	41		
			Long method						30		
	15	Ty	2.00	27		31	486	110	37	c	
	15		1.80	28		30	516	99	41		
	16		1.49	27		30	563	91	40		39
5– 1	13	M	2.49	27	A	—20	453	83	37	c	
	13		2.00	28	A	—18	516	74	49		
	14		1.50	25	A	—15	588	62	42		
	18	Ty	1.06	40		75	607	116	52	d	
	19		1.06	41		74	608	114	51		
	19		1.05	42		73	610	112	53		46
5– 2	16	T	1.80	29	B	79	497	132	56	d	
	20		1.06	26	B	—16	630	78	49		
	20		1.06	27	B	—18	628	78	43		
	15	Ty	1.99	27		67	467	172	52	c	
	15		1.80	29		69	492	163	54		
	16		1.48	30		66	545	138	55		52
5– 3	15	T	2.49	66	C	—40	388	92	44	c	
	16		1.80	67	C	—47	481	74	47		
	17		1.50	71	C	—53	526	66	54		
	14	Ty	2.49	17		32	446	139	46	b	
	15		2.01	22		36	500	123	54		
	16		1.50	17		30	584	98	50		49
			Long method						34		
5– 4	15	T	2.50	33	B	114	376	174	40	c	
	16		2.00	29	B	124	453	155	46		
	17		1.50	25	B	106	540	127	42		
	15	Ty	2.20	32		53	436	155	41	c	
	15		2.00	33		57	459	149	44		
	15		1.79	37		60	483	142	45		43
5– 5	15	T	2.50	27	B	75	384	156	30	c	
	16		2.01	31	B	73	448	137	32		
	16		1.50	32	B	88	522	122	33		32
5– 7	13	M	2.51	20	A	—28	472	79	43	b	
	13		2.00	17	A	—32	542	67	50		
	14		1.50	16	A	—29	612	55	44		
	15	T	2.52	44	B	120	357	181	39	c	
	15		2.20	44	B	120	401	166	42		
	16		2.00	43	B	116	428	155	39		
	14	Ty	2.44	50		96	346	236	46	c	
	15		1.98	46		91	421	198	45		
	16		1.48	47		94	501	166	50		45
			Long method						38		
5– 8	13	M	2.29	25	A	—18	479	83	34	d	
	14		1.66	25	A	—15	566	66	41		
	15		1.50	25	A	—17	592	61	45		
	16	T	2.00	35	B	—29	472	101	44	c	
	16		1.80	35	B	—35	506	91	45		
	16		1.49	34	B	—42	551	83	47		
	15	Ty	2.20	51		114	358	253	31	d	
	15		2.01	49		112	388	236	29		
	15		1.81	49		108	429	213	37		40
5–10	16	M	1.36	87	C	42	534	84	32	d	
	16		1.33	87	C	37	540	80	38		
	16		1.31	88	C	38	552	80	49		
	14	Ty	2.50	62		128	296	296	48	d	
	15		2.20	59		122	350	259	43		
	15		2.01	63		125	380	246	55		44

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.	Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued									
5-11 14	Ty	2.50	30	102	349	276	38	d	
15		2.19	32	101	392	246	33		
15		2.00	33	98	425	225	42		38
5-12 13	M	2.51	58	B 12	412	91	40	b	
13		2.01	59	B 11	471	78	39		
14		1.80	60	B 7	505	70	40		
18	Ty	1.11	44	85	582	129	51	d	
18		1.09	52	95	572	134	52		
18		1.07	48	88	584	125	53		43
5-13 14	Ty	2.47	49	114	335	278	65	d	
15		1.99	44	118	410	249	67		
16		1.48	38	104	510	188	64		65
5-14 15	Ty	2.20	22	58	438	176	34	c	
15		2.02	19	56	464	163	29		
15		1.80	19	56	500	151	38		34
5-15 13	M	2.49	55	B —8	431	71	50	b	
13		2.00	57	B —9	489	61	57		
14		1.50	57	B —6	561	51	50		
		Long method					44		
14	Ty	2.46	63	92	345	215	61	c	
15		2.20	59	91	382	199	54		
15		2.02	61	91	408	186	56		54
5-16 13	M	2.48	57	B —7	427	72	47	c	
13		2.19	55	B —9	463	65	43		
14		1.99	57	B —9	489	61	48		
15	T	2.50	28	B 238	371	231	60	d	
15		2.00	24	B 203	460	183	55		
16		1.50	27	B 220	533	155	58		
14	Ty	2.48	49	100	323	248	43	d	
15		2.20	50	103	369	233	42		
15		2.02	46	102	398	222	41		48
5-17 14	M	1.66	27	A —33	578	54	55	c	
15		1.50	26	A —32	600	51	52		
16		1.39	27	A —34	615	49	50		
15	Ty	2.20	26	81	419	214	45	c	
15		2.00	28	82	443	201	42		
15		1.80	28	80	476	183	42		48
5-18 13	M	2.48	39	A —16	440	81	52	d	
15		1.50	35	A —8	578	63	46		
15	Ty	2.18	63	132	356	275	72	p	
15		2.01	61	129	388	255	76		
15		1.81	60	125	420	232	66		49
5-19 13	M	2.50	11	A —40	510	72	52	a	
14		2.00	10	A —45	570	60	47		
15		1.50	9	A —44	641	49	50		
14	Ty	2.48	46	112	328	277	51	d	
15		2.20	49	113	370	254	53		
15		2.00	48	112	403	235	53		50
5-20 13	M	2.50	31	A —5	446	95	49	c	
14		2.00	30	A —10	515	79	58		
14		1.81	31	A —12	540	72	56		54
5-21 13	M	2.20	33	A —18	489	76	55	b	
14		2.00	32	A —23	518	69	54		
15		1.50	28	A —29	591	53	57		55
5-22 13	M	2.50	20	A —29	477	78	49	b	
14		2.00	17	A —34	544	66	49		
15		1.50	16	A —33	623	53	52		50
		Long method					45		
5-23 13	M	2.50	21	A —28	475	78	47	a	
14		2.00	20	A —31	540	67	53		
15		1.50	19	A —33	613	50	51		50
5-25 13	M	2.50	16	A —31	484	78	46	a	
14		2.00	15	A —33	552	67	51		
15		1.50	14	A —35	624	53	49		
17	Ty	1.20	37	126	554	192	59	d	
17		1.17	33	119	573	183	65		
17		1.15	30	109	576	173	57		50
5-26 13	M	2.50	13	A —32	492	78	47	a	
14		2.00	12	A —36	560	66	50		
15		1.50	11	A —37	629	52	51		
15	T	2.00	26	A 22	495	115	68	d	
16		1.81	23	A 16	524	105	61		
16		1.50	25	A 16	568	96	61		50
5-27 13	M	2.49	13	A —29	492	81	44	b	
14		2.00	11	A —32	562	69	49		
15		1.50	10	A —37	635	53	49		
15	T	2.50	88	D 17	377	89	65	d	
15		2.00	92	D 17	440	76	60		
16		1.50	100	D 17	512	64	55		
1942—Continued									
5-27 14	Ty	2.45	44	61	391	170	64	c	
15		2.18	45	61	428	155	58		
15		1.99	43	59	457	143	57		52
5-28 14	Ty	2.47	40	40	410	128	53	b	
15		1.99	40	36	473	104	47		
16		1.49	38	31	553	82	47		49
		Long method					60		
5-29 13	M	2.50	32	A 1	438	100	42	d	
14		2.00	29	A 10	516	80	47		
15		1.50	27	A —9	589	65	46		
15	T	2.50	13	A 13	451	130	57	p	
15		2.00	16	A 15	507	115	52		
16		1.50	27	A 21	569	99	67		
14	Ty	2.50	42	37	404	121	49	b	
15		1.99	43	37	466	104	45		
16		1.49	45	36	541	84	46		47
		Long method					35		
5-30 13	M	2.50	27	A —18	452	85	40	b	
14		2.00	26	A —19	522	73	44		
15		1.50	27	A —18	590	59	43		
		Long method					45		
15	Ty	2.19	28	26	468	105	45	b	
15		2.00	28	26	494	99	45		
16		1.80	30	26	523	91	52		44
5-31 13	M	2.50	48	B —2	428	81	46	b	
14		2.00	50	B —2	490	70	47		
15		1.50	50	B 0	564	58	48		
16	T	2.51	29	B 107	401	170	68	c	
17		2.00	29	B 105	463	147	57		
17		1.50	33	B 111	535	130	56		
		Long method					33		
14	Ty	2.50	24	35	424	138	46	b	
15		2.19	24	34	466	126	47		
15		1.99	24	34	493	118	46		47
6- 3 14	M	1.80	83	C —23	489	71	42	d	
15		1.66	77	C —18	509	67	43		
15	T	2.49	38	B 175	363	202	68	p	
15		2.00	35	B 127	449	157	56		
16		1.50	36	B 120	525	133	44		42
6- 4 13	M	2.50	58	B 5	417	83	37	c	
14		2.00	58	B 5	478	73	39		
15		1.50	61	B 7	551	58	41		
15	T	2.51	45	B 230	340	233	57	d	
15		2.00	46	B 231	416	197	51		
16		1.50	45	B 188	509	151	54		
17	Ty	1.22	59	89	543	129	47	d	
17		1.19	55	78	560	117	43		
17		1.16	52	68	571	107	41		44
6- 5 13	M	2.49	40	A —16	436	80	50	b	
14		2.00	35	A —22	509	67	51		
15		1.50	31	A —24	590	54	57		
15	T	1.99	36	B 187	436	178	53	c	
16		1.80	36	B 182	462	165	49		
16		1.51	42	B 165	511	145	51		
14	Ty	2.50	41	65	378	185	56	c	
15		1.99	45	68	441	159	48		
16		1.49	47	72	512	134	48		52
		Long method					50		
6- 6 13	M	2.50	29	A —22	454	81	49	b	
14		2.00	31	A —12	514	77	52		
15		1.50	30	A —17	591	59	54		
16	T	1.80	27	B 77	509	130	66	c	
16		1.50	27	B 61	553	114	58		
16		1.44	25	B 53	564	110	58		
14	Ty	2.19	52	86	376	197	26	d	
15		1.98	55	87	412	182	38		
15		1.80	54	84	443	166	41		51
6- 7 13	M	2.50	59	B 8	413	87	41	c	
14		2.00	49	B 0	491	72	51		
14		1.80	49	B —2	522	67	56		
15	T	2.49	25	A 11	422	119	51	b	
15		2.01	24	A 8	489	103	50		
16		1.50	23	A 10	562	91	49		50
6- 8 13	M	2.51	44	A —12	429	83	52	c	
14		2.00	43	A —14	501	70	58		
14		1.81	44	A —14	526	66	57		56
6- 9 13	M	2.50	15	A —33	485	77	46	c	
14		2.00	15	A —33	548	67	48		
14		1.80	14	A —39	577	61	43		
1942—Continued									
6- 9 15	T	2.00	103	D 66	403	129	47	d	
16		1.42	108	D 68	491	110	55		
14	Ty	2.20	55	75	404	174	59	d	
15		1.99	53	76	431	165	51		
15		1.80	52	73	457	158	45		49
6-10 14	Ty	2.18	48	49	429	128	44	b	
15		2.00	46	47	454	120	44		
15		1.81	47	48	486	111	47		45
6-11 13	M	2.50	13	A —34	490	77	38	a	
14		2.00	12	A —36	554	66	38		
15		1.50	14	A —35	621	53	45		
		Long method					43		
15	T	2.50	63	C —28	387	100	57	d	
15		2.00	61	C —28	456	88	60		
16		1.50	56	C —31	531	75	53		
16	Ty	1.43	43	39	552	89	42	c	
16		1.38	43	38	562	85	45		
16		1.34	43	36	570	80	44		44
6-12 15	T	2.50	27	B 33	412	138	48	d	
15		1.93	31	B 53	481	128	54		
16		1.48	38	B 46	537	111	50		
		Long method					32		
14	Ty	2.50	40	36	403	122	41	b	
15		1.99	41	38	469	109	43		
16		1.49	42	41	540	95	40		43
		Long method					40		
6-13 15	T	2.18	31	B 20	449	122	55	c	
15		2.00	32	B 26	474	120	57		
16		1.50	34	B 40	541	109	54		
14	Ty	2.19	28	21	468	95	34	b	
15		1.99	29	22	495	90	38		
15		1.80	28	21	522	83	37		42
6-14 14	Ty	2.22	39	40	439	120	45	c	
15		2.00	37	39	464	113	36		
15		1.80	38	38	499	104	44		42
6-15 14	M	1.73	15	A —34	586	59	49	b	
15		1.62	16	A —32	600	56	47		
15		1.50	16	A —31	615	54	48		
15	Ty	2.00	31	52	459	143	33	d	
15		1.80	33	53	488	133	36		
16		1.50	35	52	539	114	42		45
6-16 15	T	2.00	95	D 30	425	90	48	c	
16		1.81	95	D 30	455	85	49		
16		1.50	97	D 26	504	74	47		48
6-17 13	M	2.49	22	A —29	480	77	57	b	
14		2.00	18	A —30	546	68	59		
15		1.50	18	A —29	614	55	55		
15	T	2.49	64	C —28	383	101	49	d	
16		2.00	65	C —22	458	91	55		
16		1.50	56	C —31	531	75	47		54
6-18 13	M	2.50	15	A —19	479	90	46	c	
14		2.00	15	A —19	544	78	43		
16		1.50	15	A —14	618	66	44		
		Long method					40		
15	T	2.50	45	B—101	408	88	58	b	
15		2.00	39	B—101	482	76	54		
16		1.50	37	B—111	556	64	53		51
6-19 13	M	2.50	10	A —24	499	87	41	b	
14		2.00	9	A —27	569	74	53		
16		1.50	7	A —25	637	61	52		
16	T	1.50	26	B—111	574	62	52	b	
16		1.44	25	B—109	584	61	52		
17		1.39	26	B—108	590	60	52		
14	Ty	2.50	49	60	357	164	21	p	
14		2.20	42	52	407	142	19		
15		2.00	44	53	433	132	17		51
6-20 13	M	2.50	24	A —10	457	94	43	d	
14		2.00	19	A —15	533	80	46		
14		1.75	20	A —15	569	72	51		
15	T	2.50	24	A —10	441	95	55	b	
15		1.96	25	A —12	507	80	54		
16		1.50	24	A —16	577	68	51		
		Long method					45		
14	Ty	2.20	39	32	446	104	34	c	
15		2.00	33	26	479	94	31		
15		1.79	35	26	513	86	37		47
6-21 13	M	2.50	23	A —20	463	85	46	c	
14		2.00	20	A —24	532	72	46		
14		1.80	21	A —24	560	67	50		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued											
6-21	15	T	2.49	31	8	−78	429	92	54	d	
	15		2.00	30	8	−74	486	84	46		48
6-22	13	M	2.50	19	A	−33	479	75	49	b	
	14		2.00	19	A	−34	543	65	49		
	14		1.80	20	A	−36	569	60	52		
	15	T	2.50	15	A	−22	468	86	59	b	
	15		2.00	15	A	−23	530	76	56		
	16		1.50	16	A	−25	597	65	55		
	14	Ty	2.50	21		32	417	134	19	p	
	14		2.21	20		29	458	121	21		
	15		2.00	20		29	484	113	23		53
6-23	15	T	2.49	21	A	−17	448	87	54	b	
	15		2.00	24	A	−15	507	79	53		
	16		1.50	27	A	−12	571	69	54		54
6-24	15	T	2.51	23	8	−61	440	99	59	b	
	15		2.00	28	8	−56	492	90	55		
	16		1.50	28	8	−59	561	77	56		57
6-25	13	M	2.49	14	A	−31	488	81	39	c	
	14		2.00	12	A	−31	556	70	43		
	16		1.50	11	A	−18	623	64	40		41
			Long method						51		
6-26	13	M	2.49	21	A	−26	472	80	42	b	
	14		2.00	21	A	−26	533	70	49		
	14		1.80	22	A	−26	558	66	46		
	15	T	2.50	29	8	−58	421	102	48	b	
	15		2.00	34	8	−47	480	94	54		
	16		1.50	34	8	−53	556	80	57		
	15	Ty	2.00	97		129	340	211	38	p	
	15		1.80	92		115	394	179	46		
	16		1.53	91		116	438	163	44		49
6-27	13	M	2.49	31	A	−13	447	87	45	b	
	14		2.00	30	A	−18	510	73	40		
	14		1.80	30	A	−19	541	68	46		
	16	Ty	1.47	95		99	470	133	51	d	
	16		1.42	89		92	483	125	39		
	16		1.37	88		88	498	120	46		44
6-28	13	M	2.50	23	A	−26	468	79	54	b	
	14		2.00	21	A	−30	533	67	46		
	16		1.50	19	A	−30	606	54	49		
	14	Ty	2.50	81		81	317	171	22	d	
	14		2.21	86		83	357	158	23		
	15		2.00	84		85	391	150	32		45
6-29	13	M	2.50	29	A	−24	456	79	49	b	
	14		2.00	25	A	−30	527	66	48		
	16		1.50	20	A	−32	604	53	45		47
7-3	14	M	1.80	33	A	−28	546	59	54	b	
	15		1.65	31	A	−24	567	58	55		
	16		1.50	29	A	−28	592	53	53		54
7-4	13	M	2.50	18	A	−37	480	72	46	b	
	14		2.00	18	A	−38	544	62	47		
	14		1.80	18	A	−39	573	58	49		47
7-5	13	M	2.50	13	A	−34	492	76	41	b	
	14		2.00	13	A	−35	554	66	43		
	15		1.50	16	A	−28	616	56	48		44
			Long method						31		
7-6	13	M	2.50	36	A	−6	436	92	45	c	
	14		2.00	31	A	−17	513	73	49		
	15		1.50	32	A	−20	586	57	50		48
7-7	13	M	2.50	29	A	−32	461	72	49	a	
	14		2.00	29	A	−32	525	63	51		
	15		1.50	27	A	−32	598	51	52		51
7-8	13	M	2.50	42	A	−14	441	81	61	d	
	14		2.00	34	A	−23	510	67	48		
	15		1.50	36	A	−20	586	55	57		
	15	T	2.49	69	C	−51	385	84	41	d	
	15		2.20	65	C	−50	428	79	46		
	15		2.00	66	C	−53	454	74	46		50
7-9	15	T	2.46	68	C	−54	394	81	46	d	
	15		2.00	67	C	−60	459	69	49		48
7-10	13	M	2.49	73	D	9	409	80	47	c	
	14		2.00	72	D	7	475	68	46		
	15		1.50	68	D	12	547	59	47		
	16	T	1.50	57	C	−57	539	62	54	d	
	16		1.42	55	C	−52	551	62	48		48
7-12	13	M	2.50	17	A	−9	476	98	50	c	
	14		2.00	17	A	−5	540	88	54		
	14		1.80	19	A	−2	565	84	55		53
1942—Continued											
7-15	13	M	2.50	72	8	86	367	165	53	d	
	14		2.00	69	8	73	442	130	46		
	14		1.80	66	8	66	480	115	50		50
7-16	13	M	2.50	27	A	−21	460	82	51	b	
	14		1.99	27	A	−29	528	66	49		
	15		1.49	32	A	−24	592	54	49		50
			Long method						57		
7-17	13	M	2.50	27	A	−34	459	70	46	b	
	14		2.00	29	A	−36	525	60	52		
	15		1.50	28	A	−29	595	52	53		
	15	T	2.51	20	A	−21	453	84	59	d	
	16		2.00	24	A	−23	509	71	56		
	16		1.50	37	8	−114	569	63	57		52
			Long method						57		
7-18	14	M	2.00	21	A	−37	539	61	49	b	
	14		1.79	21	A	−37	568	58	51		
	15		1.50	21	A	−36	610	50	53		
	15	T	2.50	54	C	−48	399	84	51	c	
	15		2.00	56	C	−53	465	73	53		
	16		1.50	56	C	−56	540	63	57		52
7-19	13	M	2.50	17	A	−32	481	76	46	b	
	14		2.00	16	A	−36	549	64	49		
	15		1.49	15	A	−37	622	51	47		
	15	T	2.50	25	8	−42	419	108	37	p	
	15		1.99	28	8	−48	492	93	51		
	16		1.50	34	8	−19	542	90	50		47
7-20	13	M	2.50	14	A	−25	486	85	42	b	
	14		2.00	13	A	−27	549	72	41		
	15		1.50	12	A	−28	623	58	44		42
			Long method						41		
7-21	13	M	2.50	13	A	−27	486	83	40	b	
	14		2.00	13	A	−31	553	69	45		
	15		1.50	11	A	−31	625	56	46		44
7-25	13	M	2.50	30	A	−21	445	81	37	d	
	14		2.00	28	A	−27	516	67	38		
	15		1.50	28	A	−20	588	58	47		41
7-26	13	M	2.50	32	A	−25	447	77	47	c	
	14		2.00	32	A	−28	516	65	50		
	15		1.50	37	A	−15	573	58	44		47
7-27	16	M	1.41	21	A	−38	619	48	40	d	
	16		1.37	21	A	−40	627	46	44		
	16		1.35	23	A	−38	626	46	41		42
7-28	13	M	2.49	22	A	−34	473	73	47	b	
	14		2.00	20	A	−36	539	63	47		
	15		1.50	20	A	−35	613	51	50		48
			Long method						44		
7-29	13	M	2.50	20	A	−31	475	76	47	b	
	14		2.00	19	A	−34	544	65	54		
	14		1.81	19	A	−36	569	61	51		
	16	T	2.51	52	C	−37	392	93	39	d	
	16		1.95	56	C	−38	460	81	39		
	17		1.49	55	C	−46	540	67	51		49
			Long method						50		
7-30	13	M	2.49	14	A	−39	494	72	45	a	
	14		1.99	13	A	−40	561	62	50		
	14		1.79	12	A	−43	590	58	47		
	15	T	2.50	55	C	−9	377	112	43	c	
	16		1.99	57	C	−14	446	96	40		
	16		1.50	65	C	−11	508	85	38		45
7-31	14	M	1.92	10	A	−43	582	61	50	c	
	14		1.83	10	A	−42	592	60	51		
	15		1.58	9	A	−40	628	53	51		51
8-1	13	M	2.50	18	A	−12	471	94	45	c	
	14		2.00	16	A	−14	542	81	51		
	14		1.79	15	A	−17	569	74	47		
	15	T	2.51	52	C	−21	389	104	47	b	
	16		2.00	47	C	−22	464	89	50		
	16		1.50	57	C	−32	530	74	49		49
8-2	15	T	2.50	62	C	−29	382	99	43	c	
	16		1.99	55	C	−39	457	80	47		
	16		1.51	60	C	−43	529	70	49		46
8-3	13	M	2.50	10	A	−8	483	102	26	d	
	13		2.13	10	A	−9	535	91	35		
	14		1.80	10	A	−9	578	81	39		
	15	T	2.49	132	D	89	279	160	39	d	
	16		2.00	131	D	95	339	148	21		
	16		1.50	132	D	93	434	125	28		31
1942—Continued											
8-5	13	M	2.50	19	A	−24	473	84	46	c	
	14		2.00	20	A	−23	536	73	47		
	14		1.80	23	A	−21	556	69	51		48
8-6	13	M	2.50	23	A	−25	467	80	46	b	
	14		2.00	20	A	−29	537	68	44		
	15		1.50	17	A	−30	616	55	47		46
			Long method						52		
8-7	13	M	2.50	20	A	−29	472	78	43	b	
	14		2.00	19	A	−32	540	67	50		
	15		1.50	18	A	−31	610	54	48		
	16	T	2.50	160	D	121	242	191	32	p	
	16		2.00	163	D	121	321	164	36		
	17		1.50	178	D	136	399	147	41		47
			Long method						59		
8-8	13	M	2.50	17	A	−23	474	85	42	b	
	13		2.00	18	A	−25	542	72	49		
	15		1.50	16	A	−27	617	57	45		45
8-9	13	M	2.46	19	A	−19	473	89	37	d	
	13		2.00	18	A	−24	536	73	47		
	15		1.50	16	A	−23	612	59	54		46
8-10	13	M	2.49	35	A	−14	437	83	41	d	
	13		2.01	39	A	−14	497	72	46		
	14		1.53	36	A	−17	576	58	54		47
8-11	13	M	2.49	18	A	−29	478	79	48	a	
	13		2.00	19	A	−30	543	68	53		
	15		1.50	19	A	−30	610	54	51		
	15	T	2.50	173	D	90	275	138	58	d	
	16		2.00	157	D	77	361	115	57		
	17		1.50	170	D	87	435	104	47		52
8-12	13	M	2.51	17	A	−27	475	81	46	b	
	13		2.00	18	A	−30	542	68	47		
	14		1.80	17	A	−31	572	64	49		
	15	T	2.49	156	D	63	301	112	53	d	
	16		2.00	164	D	66	374	98	63		
	17		1.50	147	D	59	459	84	45		49
8-13	13	M	2.49	23	A	10	449	113	39	a	
	13		2.00	23	A	6	517	94	42		
	14		1.80	20	A	−1	551	84	44		
	15	T	2.48	84	D	19	369	93	48	d	
	16		2.00	87	D	24	427	86	45		
	17		1.44	110	D	45	485	86	33		42
8-14	16	T	2.49	106	D	34	346	103	47	d	
	16		2.00	106	D	40	417	97	40		
	17		1.50	115	D	62	467	102	37		41
			Long method						18		
8-15	13	M	2.49	23	A	−16	463	89	43	c	
	13		2.00	22	A	−20	528	75	48		
	14		1.80	22	A	−24	559	68	51		
	15	T	2.51	78	D	18	365	94	44	c	
	16		2.00	85	D	24	429	87	49		
	17		1.50	85	D	28	500	80	56		48
8-16	13	M	2.49	29	A	−11	442	93	35	b	
	13		2.00	30	A	−12	515	78	42		
	14		1.50	29	A	−11	585	63	46		41
8-17	13	M	2.49	41	A	−5	430	90	44	c	
	13		2.00	40	A	−8	494	76	36		
	14		1.50	39	A	−9	571	61	43		41
			Long method						41		
8-18	13	M	2.51	22	A	−22	462	84	40	b	
	13		2.00	21	A	−22	531	73	46		
	14		1.80	21	A	−23	557	68	47		44
8-19	13	M	2.49	5	A	−44	537	71	53	a	
	13		2.00	4	A	−44	596	63	54		
	14		1.80	4	A	−47	622	58	53		53
8-20	13	M	2.49	10	A	−29	502	83	44	b	
	13		2.00	8	A	−31	570	71	51		
	14		1.50	7	A	−32	641	57	51		49
8-21	13	M	2.51	9	A	−30	502	83	38	b	
	13		2.00	9	A	−33	567	70	40		
	14		1.50	7	A	−33	639	56	44		
			Long method						47		
	15	T	2.49	60	C	47	346	171	28	d	
	16		2.00	61	C	31	414	124	25		
	17		1.43	60	C	5	518	92	35		39
8-22	13	M	2.00	10	A	−32	562	70	44	c	
	14		1.50	8	A	−32	636	56	49		46
8-23	13	M	2.50	4	A	−39	535	76	48	c	
	13		2.00	3	A	−43	600	64	52		
	14		1.50	0	A	−42	667	53	53		51

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued										
8–24	13	M	2.50	6	A −36	523	78	51	a	
	13		2.00	6	A −38	583	66	50		
	14		1.50	5	A −38	651	53	49		50
8–26	13	M	2.50	25	A −15	456	89	40	b	
	13		2.00	25	A −17	519	76	44		
	14		1.50	26	A −12	587	63	44		
	15	T	2.50	27	B 52	397	145	42	d	
	16		2.00	27	B 94	478	143	37		
	17		1.50	24	B 32	544	106	35		42
8–27	13	M	2.50	33	A −3	433	96	29	d	
	13		2.00	35	A −5	495	81	29		
	14		1.50	36	A −6	574	65	32		
			Long method					40		
	15	T	2.49	35	B −108	428	81	51	c	
	16		2.00	33	B −115	501	69	58		
	17		1.50	32	B −128	566	58	53		47
8–28	13	M	2.50	31	A 8	434	107	38	c	
	13		2.00	32	A 9	504	93	44		
	14		1.50	32	A 0	580	69	46		43
8–29	13	M	2.49	28	A 45	432	143	37	d	
	13		2.00	29	A 43	497	121	38		
	14		1.50	27	A 34	579	91	42		
	16	T	2.50	41	B 41	376	146	46	b	
	17		2.00	39	B 28	452	122	50		
	17		1.50	40	B 18	527	103	49		46
			Long method					52		
8–30	13	M	2.49	28	A −5	445	97	39	c	
	13		2.00	29	A −6	512	83	46		
	14		1.50	31	A −7	586	65	50		
	15	T	2.50	53	C 101	332	190	32	c	
	16		2.00	54	C 99	404	164	35		
	17		1.50	59	C 102	486	140	49		42
8–31	13	M	2.51	15	A −20	481	88	46	c	
	13		2.00	14	A −26	549	73	46		
	14		1.50	17	A −18	614	62	52		
	15	T	2.49	68	C 4	363	124	43	p	
	16		1.99	73	C 14	426	115	50		
	17		1.50	79	C 23	473	105	25		48
9– 1	15	T	2.49	45	C −34	408	92	60	c	
	16		2.00	51	C −30	466	85	57		
	17		1.50	60	C −18	522	84	48		55
9– 2	15	M	1.28	39	A 8	604	62	43	d	
	16		1.18	45	A 7	617	57	44		
	15	T	2.50	19	A −12	447	95	51	b	
	16		2.00	21	A −11	509	84	53		
	17		1.50	24	A −7	569	76	52		48
9– 3	15	T	2.50	21	A −5	438	102	54	c	
	16		2.00	24	A −7	500	87	55		
	17		1.50	37	B −14	539	93	48		52
9– 4	12	M	2.52	14	A −34	484	76	40	b	
	13		2.00	16	A −32	547	67	48		
	14		1.50	15	A −30	618	55	48		
	15	T	2.51	13	A −16	461	96	45	b	
	16		2.00	13	A −20	530	81	51		
	17		1.50	16	A −18	587	71	46		46
9– 5	14	M	1.38	20	A −16	625	59	48	c	
	15		1.29	20	A −20	638	55	43		
	15		1.23	21	A −18	642	54	40		
	15	T	2.51	11	A −5	462	110	45	b	
	16		2.00	11	A −8	527	94	45		
	17		1.50	12	A −10	590	80	42		44
9– 6	12	M	2.50	32	A −15	447	86	49	b	
	13		1.99	33	A −18	517	72	50		
	14		1.50	28	A −17	590	59	50		
	15	T	2.50	20	A −14	448	92	49	c	
	16		2.00	19	A −17	513	79	55		
	17		1.50	24	A −14	573	70	40		
	15	Ty	2.49	48	30	406	100	40	d	
	15		2.19	49	31	441	93	34		
	15		2.00	54	37	465	91	35		48
9– 7	12	M	2.50	10	A −36	503	77	43	b	
	13		2.00	9	A −38	567	66	43		
	14		1.50	7	A −40	641	52	44		
			Long method					43		
	15	T	2.50	39	B −6	389	125	16	d	
	16		2.00	37	B −22	463	104	24		
	17		1.50	42	B −31	535	88	38		
			Long method					65		
9– 7	15	Ty	2.51	105	79	309	151	21	p	
	15		2.00	109	80	382	131	24		
	16		1.50	112	74	467	104	14		40
			Long method					62		
9– 8	12	M	2.52	7	A −32	515	81	48	a	
	13		2.00	6	A −34	581	69	53		
	14		1.50	5	A −35	650	55	52		
	15	Ty	2.51	130	100	264	184	13	p	
	15		2.20	124	99	313	165	14		
	15		2.00	124	97	348	152	19		51
9– 9	12	M	2.51	13	A −8	478	101	41	b	
	13		2.01	13	A −12	548	84	46		
	14		1.50	12	A −13	622	67	49		
	15	Ty	2.50	75	55	355	121	25	p	
	15		2.20	71	52	399	111	25		
	15		2.00	70	51	428	103	19		45
9–10	12	M	2.51	16	A 16	464	121	35	c	
	13		2.00	16	A 11	532	100	37		
	14		1.50	16	A 11	608	80	45		
	15	T	2.50	25	B 67	391	152	33	c	
	16		1.99	28	B 56	462	130	46		
	17		1.50	39	B 81	519	121	42		40
9–11	12	M	2.50	20	A 33	449	135	40	c	
	13		2.00	18	A 24	524	110	46		
	14		1.50	18	A 23	595	87	43		43
9–12	15	T	2.50	52	C 31	365	139	32	c	
	16		2.00	49	C 26	440	119	38		
	17		1.50	50	C 17	519	99	45		38
9–13	12	M	2.50	31	A 34	434	130	52	c	
	13		2.00	35	A 41	492	116	43		
	14		1.50	39	A 35	563	88	40		
	16	T	2.20	37	B −30	438	106	40	c	
	16		2.00	40	B −36	461	100	41		
	17		1.50	47	B −34	525	88	43		44
9–14	14	M	1.48	57	B 22	554	69	48	c	
	14		1.36	61	B 16	571	61	44		
	15		1.26	61	B 17	586	58	43		
	15	T	2.49	40	B −10	374	124	21	d	
	16		2.00	42	B −6	446	111	27		
	17		1.50	56	C 31	495	108	32		39
9–15	15	T	2.49	45	B 51	360	150	27	d	
	16		2.00	43	B 46	434	129	30		
	17		1.50	53	C 73	487	127	26		
	15	Ty	2.21	76	59	394	118	40	d	
	15		2.00	90	65	411	112	34		
	16		1.80	83	62	445	102	34		32
9–16	15	Ty	2.50	116	110	271	199	26	p	
	15		2.00	112	107	350	167	27		
	16		1.50	115	110	436	138	38		
			Long method					50		
9–17	16	T	2.50	53	C 12	369	126	30	d	
	16		2.19	52	C 2	419	111	41		
	16		2.00	50	C 2	444	105	28		33
9–20	15	T	2.49	37	B 3	392	128	32	c	
	16		2.00	35	B −4	463	109	31		
	17		1.50	36	B −34	545	86	38		34
9–21	16	T	2.51	35	B 41	385	141	37	c	
	16		2.00	35	B 41	453	125	40		
	17		1.50	36	B 61	517	116	28		35
			Long method					29		
9–22	12	M	2.20	55	B 37	446	101	50	c	
	13		2.00	53	B 36	475	103	51		
	14		1.50	59	B 29	552	76	53		51
9–23	12	M	2.56	37	A 24	420	120	47	d	
	13		2.01	41	A 23	490	99	51		
	13		1.50	34	A −1	577	67	50		49
9–24	13	M	1.70	38	A 24	539	90	46	d	
	13		1.50	32	A 1	580	69	50		
	14		1.37	35	A 8	599	67	48		48
9–25	12	M	2.51	17	A 0	464	106	39	c	
	13		2.00	16	A −9	539	85	40		
	13		1.50	12	A −23	622	61	45		41
			Long method					46		
9–26	12	M	2.52	21	A −23	470	83	49	b	
	13		2.01	18	A −30	541	68	52		
	13		1.50	18	A −30	615	54	52		51
9–27	12	M	2.50	20	A −24	474	82	48	b	
	13		1.99	17	A −30	545	69	49		
	13		1.50	17	A −30	618	55	52		
9–27	15	Ty	2.49	69	84	331	193	34	c	
	15		2.21	69	82	378	172	38		
	16		2.00	68	83	407	164	37		45
9–28	16	T	2.50	32	B −80	428	92	58	c	
	16		2.20	31	B −81	468	84	57		
	16		2.00	31	B −84	498	79	59		
	15	Ty	2.51	51	49	385	137	43	c	
	15		2.21	48	46	428	123	41		
	16		2.00	47	45	459	114	39		50
9–29	13	M	2.00	12	A −22	552	77	47	b	
	13		1.80	13	A −25	581	70	48		
	13		1.50	12	A −26	624	59	47		
	15	Ty	2.49	37	23	421	98	38	b	
	15		2.29	34	22	462	90	38		
	16		2.00	33	21	493	85	38		43
9–30	12	M	2.51	12	A −24	490	86	43	a	
	12		2.00	13	A −27	554	72	43		
	13		1.50	11	A −29	629	57	44		
			Long method					48		
	16	T	2.50	57	C 67	350	164	47	b	
	16		2.00	57	C 65	419	143	44		
	17		1.50	56	C 51	503	116	45		
	15	Ty	2.51	49	36	400	112	38	c	
	16		2.00	54	38	460	95	37		
	17		1.50	55	41	531	84	36		43
			Long method					40		
10– 1	12	M	2.51	12	A −19	489	91	44	b	
	12		2.00	12	A −23	556	76	46		
	13		1.50	10	A −26	634	59	53		
	16	T	2.46	40	B −58	410	103	41	c	
	16		2.01	39	B −62	477	89	45		
	18		1.50	50	B −20	523	94	50		
			Long method					48		
	15	Ty	2.50	75	83	327	183	39	c	
	15		2.20	76	85	370	171	45		
	16		2.00	74	84	403	159	46		46
10– 2	12	M	2.51	11	A −28	497	83	44	b	
	12		2.00	11	A −29	562	71	49		
	13		1.50	10	A −33	635	55	49		
	16	T	2.50	36	B 11	391	134	41	b	
	16		2.19	37	B 6	436	120	40		
	16		2.01	35	B 18	462	117	46		44
10– 3	12	M	2.51	22	A −24	464	83	39	b	
	12		2.00	21	A −24	536	71	46		
	13		1.50	21	A −24	606	58	48		
			Long method					42		
	17	T	1.81	69	C 76	432	144	48	c	
	17		1.71	67	C 80	450	141	42		
	18		1.50	65	C 60	493	122	48		45
10– 4	12	M	2.51	18	A 6	461	111	43	c	
	12		2.00	18	A 8	530	97	48		
	13		1.50	16	A −2	612	72	49		
	16	T	2.50	93	D 69	314	157	35	d	
	16		2.20	91	D 66	366	143	40		
	16		2.00	90	D 66	392	135	40		
	17	Ty	1.45	94	134	435	178	23	p	
	17		1.41	93	131	443	172	30		
	17		1.39	95	130	449	167	36		44
10– 5	16	T	2.50	72	C 6	352	126	36	c	
	16		2.00	72	C 1	425	108	42		
	18		1.50	70	C −4	503	90	43		40
10– 7	12	M	2.51	20	A −3	458	102	51	b	
	12		2.00	20	A −11	534	82	50		
	13		1.50	17	A −26	611	58	46		44
10– 8	12	M	2.50	21	A −25	472	81	47	b	
	12		2.00	20	A −29	539	68	52		
	13		1.50	18	A −29	611	55	48		49
10– 9	12	M	2.50	21	A 17	451	120	47	b	
	12		2.00	20	A 17	521	99	45		
	13		1.50	20	A 11	596	79	41		
			Long method					43		45
10–10	12	M	2.50	35	A 92	398	184	25	p	
	12		2.00	36	A 87	475	151	30		
	14		1.50	34	A 73	559	111	34		
10–12	12	M	2.51	24	A 23	438	125	33	d	
	12		2.00	22	A 12	513	99	38		
	13		1.50	23	A 24	584	85	41		37

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued											
10–13	12	M	2.51	22	A	−10	461	94	46	b	
	12		2.00	21	A	−14	535	79	50		
	13		1.50	20	A	−12	603	65	49		
	16	T	2.50	34	8	−75	416	95	51	c	
	17		2.00	38	8	−91	485	80	48		
	18		1.50	44	8	−93	551	71	58		49
10–14	16	T	2.20	108	D	24	396	81	46	d	
	17		2.01	109	D	23	423	75	51		
	17		1.79	114	D	26	453	71	48		48
10–15	16	T	2.50	59	C	−42	398	89	59	c	
	16		2.20	66	C	−43	429	84	55		
	17		2.00	61	C	−43	463	79	57		
	15	Ty	2.51	64		60	364	146	48	c	
	16		2.20	63		58	406	131	40		
	16		2.01	66		59	434	121	41		50
10–16	12	M	2.50	31	A	9	434	108	36	b	
	12		2.00	32	A	6	499	92	38		
	13		1.50	30	A	5	581	73	40		
			Long method						39		
	16	T	2.51	39	B	−95	416	87	46	c	
	17		2.01	33	B	−99	488	75	44		
	18		1.50	39	8	−107	557	65	57		41
			Long method						52		
10–17	12	M	2.51	26	A	−3	448	99	43	b	
	12		2.01	26	A	−7	521	83	50		
	13		1.50	23	A	−11	600	65	49		47
10–18	12	M	2.50	25	A	12	449	114	48	b	
	12		2.00	23	A	7	520	95	48		
	13		1.50	24	A	5	596	74	53		50
10–19	16	T	2.50	101	D	68	300	151	16	p	
	16		2.20	99	D	69	350	141	22		
	17		1.80	96	D	62	418	122	30		
10–20	16	T	2.51	70	C	−4	346	118	20	d	
	16		2.20	72	C	−2	388	112	25		
	17		2.00	72	C	−6	418	104	23		23
10–21	12	M	2.51	49	8	100	383	194	47	c	
	12		2.00	49	8	91	463	155	51		
	13		1.50	49	8	73	547	109	54		
	17	T	2.12	54	C	−14	430	99	38	c	
	17		1.80	51	C	−18	481	87	38		
	15	Ty	2.50	48		24	401	89	27	c	
	16		2.20	48		26	436	84	27		
	16		2.01	48		28	463	82	30		38
10–22	16	T	2.50	46	C	−43	411	86	54	c	
	17		2.20	49	C	−43	446	81	51		
	17		2.00	53	C	−44	467	77	47		
	17	Ty	1.48	32		13	575	59	34	d	
	17		1.45	33		13	577	58	35		
	17		1.43	32		13	579	59	33		45
10–23	12	M	1.79	28	A	3	544	84	48	c	
	13		1.50	27	A	5	587	74	49		
	13		1.38	29	A	11	603	71	46		
	16	T	2.49	66	C	−20	376	107	38	b	
	17		2.21	66	C	−18	413	100	37		
	17		2.00	68	C	−19	442	95	43		42
10–24	12	M	2.51	37	A	59	412	151	35	d	
	12		2.00	35	A	51	487	123	34		
	13		1.50	32	A	36	572	91	46		
	16	T	2.51	69	C	16	361	131	52	c	
	17		2.20	70	C	11	401	119	47		
	17		2.00	70	C	6	428	110	47		45
10–25	12	M	2.50	33	A	60	419	155	37	c	
	12		2.00	31	A	54	492	128	38		
	13		1.50	28	A	44	574	97	43		
	16	T	2.49	82	D	75	305	172	17	p	
	17		2.20	82	D	72	357	154	27		
	17		2.00	81	D	67	395	137	33		39
10–26	12	M	2.51	28	A	12	447	112	50	c	
	12		2.00	28	A	14	515	98	50		
	13		1.50	26	A	14	591	79	49		
			Long method						44		
	16	Ty	2.50	31		22	417	102	21	d	
	16		2.00	27		18	494	84	29		
	17		1.51	31		17	562	67	33		43
			Long method						60		
10–27	12	M	2.50	24	A	115	420	212	39	d	
	12		2.01	22	A	96	503	163	47		
	13		1.50	20	A	71	592	114	52		46
1942—Continued											
10–28	12	M	2.51	16	A	2	476	108	55	b	
	12		2.00	14	A	−4	543	90	48		
	13		1.50	14	A	−2	614	74	47		50
10–29	12	M	2.50	16	A	2	469	108	44	b	
	12		2.00	17	A	7	533	97	46		
	13		1.50	14	A	−4	613	72	47		
	18	T	1.68	51	8	−27	517	80	60	d	
	18		1.63	50	8	−26	524	79	58		
	18		1.59	51	8	−35	531	75	57		48
10–30	12	M	2.51	22	A	74	432	172	38	d	
	12		2.00	22	A	54	511	132	41		
	13		1.50	21	A	47	592	100	47		
	16	T	2.49	54	C	−12	401	110	66	c	
	17		2.21	53	C	−6	433	105	61		
	17		2.01	59	C	−14	454	97	60		
			Long method						17		
	17	Ty	1.64	31		13	553	64	41	b	
	17		1.60	31		13	558	64	38		
	18		1.56	30		12	566	62	42		46
10–31	17	T	2.20	64	C	−61	429	73	47	b	
	17		2.01	66	C	−68	457	71	47		
	18		1.80	65	C	−62	487	65	48		
	16	Ty	2.49	27		10	445	82	36	d	
	16		2.34	26		10	463	79	33		
	16		2.21	26		10	477	76	34		44
11– 1	12	M	2.51	10	A	−24	498	87	42	b	
	12		2.00	10	A	−26	563	74	47		
	13		1.50	8	A	−31	637	57	48		
	16	T	2.50	61	C	−54	395	80	46	b	
	17		2.20	61	C	−56	434	75	50		
	17		2.00	61	C	−56	465	71	52		
	16	Ty	2.49	47		16	423	72	44	b	
	16		2.20	46		15	460	68	41		
	16		2.00	44		16	484	65	39		46
11– 2	12	M	2.51	14	A	−24	485	86	43	d	
	12		1.98	14	A	−28	556	72	46		
	13		1.50	12	A	−30	623	57	44		
	16	T	2.50	43	C	−53	414	79	49	b	
	17		2.20	44	C	−53	453	73	53		
	17		2.00	47	C	−52	473	72	52		
	16	Ty	2.50	46		16	412	74	32	c	
	16		2.21	49		19	449	70	35		
	16		2.00	49		20	475	67	33		47
11– 3	14	M	1.11	12	A	25	676	69	49	d	
	15		1.07	12	A	28	678	67	45		
	15		1.04	11	A	32	686	67	46		
	16	Ty	2.49	70		32	392	80	47	b	
	16		2.21	70		33	429	75	46		
	16		2.00	67		33	457	73	43		46
11– 4	12	M	2.50	13	A	9	480	116	48	b	
	12		2.00	13	A	8	543	99	48		
	13		1.50	13	A	12	612	82	46		47
11– 5	12	M	2.49	22	A	36	451	137	50	d	
	12		2.00	19	A	22	525	108	48		
	13		1.49	21	A	26	592	88	45		
	17	Ty	1.91	53		29	483	78	44	d	
	17		1.81	54		31	491	77	43		47
11– 6	16	T	2.50	51	C	−45	398	86	45	d	
	17		2.20	52	C	−37	432	86	44		
	17		2.00	55	C	−31	452	86	41		
	20	Ty	1.59	75		38	512	64	42	d	
	20		1.62	73		36	512	64	46		
	20		1.66	87		44	500	66	47		44
11– 7	12	M	2.50	31	A	27	430	125	44	b	
	12		2.00	29	A	17	505	101	41		
	13		1.50	28	A	14	584	78	42		
			Long method						48		
	16	Ty	2.50	74		32	393	76	49	c	
	16		2.21	76		36	428	74	46		
	17		2.01	70		31	459	67	45		44
			Long method						40		
11– 8	16	T	2.50	37	8	−120	427	77	51	b	
	17		2.20	38	8	−124	462	72	45		
	17		2.00	39	8	−123	487	68	49		
	16	Ty	2.51	59		25	403	79	51	b	
	16		2.22	60		26	439	73	46		
	17		2.01	63		29	464	70	46		48
1942—Continued											
11– 9	12	M	2.51	46	8	51	403	140	36	d	
	12		2.00	46	8	50	472	119	38		
	12		1.73	46	8	51	514	107	41		
	17	T	2.50	93	D	17	369	85	50	c	
	17		2.20	90	D	16	409	80	44		
	17		2.00	85	D	15	438	77	50		
	16	Ty	2.52	55		22	408	76	48	b	
	16		2.21	55		23	447	71	43		
	17		2.01	56		24	472	68	44		45
11–10	12	M	1.75	52	8	86	493	134	40	d	
	13		1.50	52	8	86	536	117	42		
	13		1.35	50	8	80	566	103	42		
	17	T	2.49	66	C	56	393	80	51	c	
	17		2.00	65	C	59	460	70	52		
	16	Ty	2.50	81		79	340	169	49	c	
	16		2.21	78		73	388	143	44		
	17		2.01	82		73	418	131	47		47
11–11	12	M	2.50	29	A	3	440	104	46	b	
	12		2.00	29	A	4	512	91	53		
	13		1.50	24	A	6	594	68	56		
	16	Ty	2.52	58		48	376	128	38	d	
	16		2.22	58		48	417	117	38		
	17		2.01	57		47	447	108	37		47
11–12	11	M	2.51	18	A	−17	474	90	45	b	
	12		2.00	17	A	−22	540	75	47		
	13		1.50	17	A	−23	615	59	49		
	19	Ty	1.57	45		27	534	73	32	d	
	19		1.56	44		25	539	69	35		
	19		1.56	46		26	536	69	33		42
11–13	12	M	2.49	20	A	−11	470	94	51	b	
	12		2.00	19	A	−17	537	78	50		
	13		1.50	18	A	−16	612	63	51		
	17	T	2.51	109	D	18	363	77	53	c	
	17		2.20	109	D	18	404	73	51		
	18		2.00	111	D	18	426	69	46		
			Long method						35		
	16	Ty	2.21	47		26	446	85	37	d	
	17		2.11	48		28	460	85	38		
	17		2.00	47		27	470	83	33		49
11–14	11	M	2.50	25	A	62	432	159	43	c	
	12		2.00	28	A	51	505	127	45		
	13		1.50	25	A	33	587	91	46		
			Long method						51		
	17	T	2.50	106	D	18	363	78	50	c	
	17		2.20	100	D	14	407	73	48		
	18		2.00	94	D	12	441	69	53		47
11–15	11	M	2.50	23	A	23	454	124	55	c	
	12		2.00	20	A	8	532	97	56		
	13		1.50	19	A	−2	604	72	49		53
11–16	11	M	2.50	17	A	−35	487	74	52	a	
	12		2.00	17	A	−36	551	64	53		
	13		1.50	16	A	−35	620	52	48		51
11–17	11	M	2.50	18	A	−9	474	97	50	b	
	12		2.00	17	A	−12	541	83	50		
	13		1.50	17	A	−17	613	66	51		
	17	T	2.41	60	C	−60	416	75	55	c	
	17		2.20	60	C	−62	440	72	52		
	18		2.00	61	C	−58	462	70	47		50
11–18	11	M	2.50	23	A	31	448	132	48	c	
	12		2.00	21	A	29	517	112	49		
	13		1.50	24	A	36	581	94	41		
	17	T	2.50	62	C	−53	401	82	50	c	
	17		2.20	64	C	−56	439	76	53		
	17		2.08	66	C	−58	453	73	48		
	16	Ty	2.44	60		25	415	76	50	b	
	16		2.20	55		23	446	72	45		
	17		2.00	58		26	472	69	45		48
11–19	11	M	2.49	38	A	90	403	179	36	d	
	12		2.00	38	A	82	476	146	36		36
11–20	11	M	2.51	21	A	−4	413	101	51	c	
	12		2.01	19	A	−8	533	85	53		
	13		1.50	17	A	−15	612	64	51		52
11–21	11	M	2.51	29	A	16	444	116	53	b	
	12		2.00	27	A	9	514	95	45		
	13		1.50	31	A	14	578	78	46		
			Long method						03		
	16	Ty	2.50	11		9	475	97	31	c	
	17		2.20	10		7	515	86	31		
	17		2.00	10		9	539	86	32		44

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1942—Continued											
11-22	11	M	2.51	53	B	84	393	174	60	c	
	12		2.00	49	B	70	471	136	57		
	13		1.50	49	B	73	552	109	57		
	17	T	2.50	91	D	8	377	75	44	c	
	17		2.21	90	D	9	416	71	48		
	18		2.00	90	D	8	442	66	44		52
11-23	17	T	2.50	70	C	−69	395	73	47	b	
	17		2.20	70	C	−72	434	67	46		
	18		2.00	67	C	−68	441	65	43		
			Long method						33		
	16	Ty	2.50	56		21	412	73	47	b	
	17		2.20	56		21	453	67	48		
	17		2.00	56		22	477	64	43		45
			Long method						51		
11-24	17	T	2.50	56	C	−61	408	76	53	b	
	17		2.20	63	C	−66	437	70	44		
	18		2.00	66	C	−63	462	68	46		
	16	Ty	2.50	46		16	419	75	42	b	
	17		2.20	48		18	457	70	42		
	17		2.00	46		17	484	66	39		45
11-25	11	M	2.51	70	B	30	399	104	54	c	
	12		2.01	66	B	25	468	87	47		
	13		1.50	64	B	20	550	67	48		
	16	Ty	2.50	42		18	421	83	42	c	
	17		2.20	44		21	457	79	43		
	17		2.00	42		20	480	74	35		46
11-26	11	M	2.51	53	B	16	414	97	45	c	
	12		2.00	51	B	11	484	81	47		
	13		1.50	49	B	0	567	58	50		47
11-27	11	M	2.51	60	B	56	395	138	55	c	
	12		2.00	57	B	48	468	113	53		
	13		1.50	53	B	44	552	88	54		54
11-28	11	M	2.51	63	B	62	391	142	55	c	
	12		2.00	61	B	66	457	127	51		
	13		1.50	61	B	71	542	104	59		
			Long method						42		
	18	T	2.14	58	C	−59	448	72	49	c	
	18		1.99	68	C	−57	460	72	52		
	19		1.84	63	C	−59	485	67	51		53
11-29	11	M	2.51	46	A	23	421	112	65	d	
	12		2.00	41	A	14	493	92	54		
	13		1.50	38	A	8	572	71	53		57
11-30	11	M	2.51	43	A	17	422	109	51	b	
	12		2.01	41	A	14	492	92	53		
	13		1.50	38	A	15	572	75	51		52
12- 1	11	M	2.51	32	A	27	435	125	51	c	
	12		2.00	29	A	17	510	101	50		
	13		1.50	23	A	1	596	72	49		50
12- 2	11	M	2.51	19	A	−12	473	95	54	c	
	12		2.00	20	A	−12	539	81	58		
	13		1.50	19	A	−8	606	68	51		
	16	Ty	2.51	50		21	413	80	48	b	
	17		2.21	51		22	451	75	44		
	17		2.00	52		23	477	71	42		49
12- 3	11	M	2.51	16	A	3	475	109	47	c	
	12		2.00	14	A	−8	546	87	41		
	13		1.50	13	A	−12	620	67	44		
			Long method						48		
	18	T	2.21	46	C	23	453	123	94	p	
	18		2.14	46	C	15	464	116	91		
	18		2.00	40	B	65	483	136	94		44
12- 4	12	M	2.50	23	A	61	437	162	45	c	
	12		2.00	23	A	56	509	132	44		
	13		1.50	25	A	71	581	110	45		45
12- 5	12	M	2.50	16	A	13	470	119	53	c	
	12		2.00	15	A	10	541	100	54		
	13		1.50	15	A	31	608	94	54		54
12- 6	12	M	2.51	24	A	8	453	111	50	b	
	12		2.00	24	A	2	523	91	51		
	13		1.50	21	A	−1	597	71	47		
	17	T	2.49	12	A	60	431	188	51	d	
	18		2.19	18	A	65	470	173	47		
	18		2.00	13	A	76	474	180	34		48
12- 7	12	M	2.50	29	A	51	426	148	36	d	
	12		2.00	29	A	45	497	122	39		
	13		1.50	29	A	26	576	86	44		
	17	T	2.50	26	B	−33	426	111	57	d	
	18		2.21	28	B	−48	459	98	47		
	18		2.01	31	B	−64	486	87	52		43
1942—Continued											
12- 8	12	M	2.50	35	A	55	407	149	19	p	
	12		2.00	34	A	52	482	125	26		
	13		1.50	28	A	32	574	90	37		
12- 9	12	M	2.49	33	A	50	411	145	21	p	
	12		2.00	38	A	52	475	123	20		
	13		1.50	34	A	38	561	91	34		25
12-10	12	M	2.50	35	A	40	419	134	32	d	
	12		2.00	30	A	24	502	105	37		
	13		1.50	24	A	12	586	79	38		
			Long method						54		
	17	T	2.50	73	C	−57	381	80	47	c	
	18		2.21	75	C	−62	420	74	45		
	18		2.01	74	C	−60	448	71	44		
	17	Ty	2.18	32		13	473	76	39	c	
	17		2.00	33		16	490	76	35		
	18		1.90	35		20	505	78	44		40
12-11	12	M	2.51	32	A	45	417	141	34	c	
	12		2.00	32	A	40	494	117	41		
	13		1.50	30	A	31	572	89	38		
	16	Ty	2.19	49		35	437	100	45	b	
	16		2.09	48		34	451	96	41		
	17		2.00	51		37	460	97	45		42
12-12	12	M	2.49	32	A	46	426	142	39	b	
	12		2.00	32	A	44	496	120	42		
	13		1.50	31	A	41	570	94	42		41
12-13	12	M	2.50	31	A	92	408	186	30	p	
	12		2.00	27	A	66	497	139	39		
	13		1.50	26	A	60	568	106	30		
	18	T	2.01	26	B	−103	496	73	43	b	
	19		1.97	28	B	−98	496	74	42		
	19		1.93	29	B	−94	500	74	44		
	17	Ty	2.50	47		17	420	76	47	b	
	17		2.20	46		17	457	70	40		
	18		2.00	44		17	486	66	44		43
			Long method						52		
12-14	12	M	2.49	28	A	42	435	140	45	c	
	12		2.00	27	A	35	507	115	48		
	13		1.50	25	A	22	585	85	45		
	17	T	2.50	39	B	−73	403	99	36	c	
	18		2.20	39	B	−70	439	93	34		
	18		2.01	38	B	−60	458	91	28		40
			Long method						41		
12-15	13	M	1.61	28	A	12	566	82	45	d	
	13		1.53	28	A	12	581	79	53		
	17	T	2.50	27	B	−54	426	102	44	c	
	18		2.20	25	A	−9	464	88	36		
	18		2.01	24	A	−14	493	80	35		
	19	Ty	1.79	17		4	558	65	44	b	
	19		1.79	20		6	548	66	39		
	20		1.81	24		9	542	67	45		43
12-16	12	M	2.51	43	A	81	398	169	35	d	
	12		2.00	41	A	77	475	141	37		
	13		1.50	43	A	86	548	116	36		
	17	T	2.50	16	A	−30	457	77	44	c	
	19		1.99	19	A	−26	516	70	45		
	17	Ty	2.50	33		12	429	80	38	b	
	17		2.20	35		14	469	75	41		
	18		2.00	33		14	495	72	41		40
12-19	12	M	2.50	60	B	135	358	226	47	a	
	12		2.00	55	B	128	435	185	46		
	13		1.50	53	B	112	526	136	44		
	18	T	2.49	36	B	−112	424	80	39	c	
	18		2.19	34	B	−122	468	73	34		
	19		2.00	32	B	−116	489	69	41		41
			Long method						77		
12-20	12	M	2.50	42	A	65	403	155	34	d	
	12		2.00	43	A	64	474	130	33		
	13		1.50	46	A	77	545	109	34		
	18	T	2.50	34	B	−123	427	75	30	c	
	18		2.18	36	B	−138	466	67	33		
	19		2.00	33	B	−127	490	65	37		33
			Long method						27		
12-21	12	M	2.51	52	B	107	383	201	42	c	
	12		2.00	49	B	97	453	161	38		
	13		1.50	45	B	93	541	122	37		
			Long method						47		
	18	T	2.50	29	B	−97	432	84	43	b	
	18		2.20	32	B	−94	466	81	45		
	19		2.01	32	B	−108	490	72	41		42
1942—Continued											
12-22	12	M	2.50	86	C	244	314	268	46	b	
	12		2.00	86	C	239	390	223	41		
	13		1.50	90	C	225	484	171	43		
	18	T	2.49	104	D	13	365	74	45	d	
	18		2.20	100	D	9	407	67	37		
	19		2.00	98	D	11	435	67	41		
	17	Ty	2.25	54		23	443	74	51	c	
	17		2.17	55		24	450	72	46		
	17		2.10	56		25	462	71	51		44
12-23	12	M	2.19	125	C	294	318	282	39	p	
	12		2.00	124	C	297	348	263	37		
	13		1.50	127	C	255	448	189	39		
	17	Ty	2.50	76		34	389	76	52	c	
	17		2.20	69		32	435	74	48		
	18		2.00	69		34	460	72	49		50
12-25	12	M	2.50	124	C	250	282	283	42	d	
	12		2.00	120	C	237	367	229	44		
	13		1.50	125	C	237	455	181	43		43
12-26	12	M	2.50	125	C	143	315	211	53	d	
	12		2.00	120	C	133	393	171	48		
	13		1.50	116	C	125	488	131	51		
	18	T	2.50	13	A	−25	467	85	41	a	
	18		2.20	13	A	−31	505	74	41		
	19		2.01	15	A	−26	526	73	41		43
12-27	13	M	1.50	83	C	123	509	124	51	d	
	13		1.38	82	C	120	530	114	51		
	14		1.28	80	C	118	550	105	52		51
12-28	12	M	2.50	65	B	76	372	157	41	c	
	12		2.00	61	B	66	450	127	41		
	13		1.50	59	B	64	535	100	46		
	18	T	2.32	71	C	−74	413	67	40	c	
	18		2.20	74	C	−78	426	64	37		
	19		1.99	76	C	−79	454	60	40		
	17	Ty	2.50	44		31	410	109	46	c	
	17		2.20	44		31	449	98	47		
	18		2.00	42		32	481	95	50		43
12-29	12	M	2.49	76	C	110	357	176	44	c	
	12		2.00	75	C	100	433	143	47		
	13		1.50	77	C	106	515	116	46		
			Long method						47		
	18	T	2.49	39	B	33	401	140	65	p	
	18		2.20	33	B	58	448	138	62		
	19		1.96	23	B	85	488	138	54		
12-29	17	Ty	2.50	56		22	407	77	45	b	
	17		2.20	57		24	445	72	46		
	18		2.00	64		29	467	69	49		47
12-30	12	M	2.50	71	B	82	365	161	41	d	
	12		2.00	67	B	74	446	132	43		
	13		1.50	64	B	71	527	103	46		
	18	T	2.50	34	B	−78	412	94	34	d	
	18		2.21	34	B	−109	453	76	30		
	19		2.00	35	B	−116	480	70	31		
	17	Ty	2.50	85		48	369	96	47	d	
	17		2.20	87		45	411	86	44		
	18		2.00	85		49	439	86	50		41
12-31	12	M	2.50	82	C	93	359	166	49	d	
	12		2.00	88	C	97	426	144	49		
	13		1.50	89	C	100	506	115	52		
	18	T	2.50	66	C	−46	384	87	38	c	
	18		2.20	66	C	−49	423	79	37		
	19		2.00	65	C	−46	451	78	40		45
1943											
1- 1	12	M	2.49	103	C	128	332	195	48	c	
	12		2.00	99	C	119	406	159	43		
	13		1.50	97	C	111	494	122	46		46
1- 2	12	M	2.49	97	C	129	334	195	46	c	
	12		2.00	95	C	120	407	159	42		
	13		1.50	94	C	116	497	123	46		45
1- 3	12	M	2.44	127	C	249	288	276	35	d	
	12		2.00	120	C	232	366	226	45		
	13		1.50	110	C	205	466	166	43		41
1- 4	12	M	2.49	131	C	273	265	298	28	d	
	12		2.00	122	C	262	354	243	33		
	13		1.50	110	C	213	463	169	38		33
1- 5	12	M	2.49	158	C	273	242	305	18	p	
	12		1.99	156	C	249	333	244	25		
	13		1.50	160	C	244	428	190	37		

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued										
1- 6	18	T	2.48	26	B 222	375	221	47	d	
	18		2.19	27	B 206	417	195	40		
	19		2.00	27	B 170	451	172	43		43
1- 7	12	M	2.49	129	C 208	285	253	38	d	
	12		2.00	129	C 197	363	208	39		
	13		1.50	129	C 196	455	164	42		
	18	T	2.50	27	B 13	412	129	45	d	
	18		2.20	26	B −22	454	107	36		
	19		2.00	27	B −9	477	106	37		40
1- 8	12	M	2.50	146	C 252	261	288	33	d	
	12		2.00	148	C 247	342	239	36		
	13		1.50	154	C 246	433	189	41		
	18	T	2.49	19	A 2	428	112	32	c	
	18		2.20	16	A −13	477	99	38		
	19		2.00	15	A −14	508	85	37		36
1- 9	12	M	2.49	146	C 200	280	252	46	d	
	12		2.00	148	C 195	357	210	46		
	13		1.50	144	C 194	449	165	49		
	18	T	2.19	52	C −21	409	97	29	p	
	18		2.11	53	C −13	421	99	24		
	19		1.95	54	C −10	437	96	30		47
1-10	12	M	2.50	110	C 207	304	251	52	d	
	12		2.00	109	C 177	389	194	45		
	13		1.50	99	C 164	485	145	47		
	18	T	2.50	53	C 36	339	143	12	p	
	18		2.19	55	C 40	384	124	23		
	19		2.01	55	C 40	415	118	28		48
1-11	12	M	2.50	107	C 249	297	278	50	d	
	12		2.00	108	C 236	372	226	44		
	13		1.50	102	C 199	473	162	40		
	18	T	2.49	51	C −2	365	117	13	p	
	18		2.19	49	C −5	405	105	11		
	19		1.99	48	C −2	431	103	13		45
			Long method					19		
1-12	12	M	2.49	98	C 229	304	260	42	d	
	12		2.00	96	C 200	387	204	39		
	13		1.62	94	C 195	454	169	37		
	18	T	2.50	28	B −64	407	97	17	p	
	18		2.19	30	B −71	447	89	19		
	19		2.00	31	B −75	470	83	22		
	17	Ty	2.50	38	33	387	118	14	d	
	17		2.20	41	35	428	109	20		
	18		2.00	39	35	458	104	22		33
1-13	13	M	1.75	111	C 163	428	168	40	d	
	13		1.50	110	C 168	473	149	43		
	13		1.44	105	C 161	489	140	43		
	18	T	2.30	39	B −115	433	76	30	c	
	18		2.20	39	B −121	448	73	33		
	19		2.00	40	B −125	476	68	35		
	16	Ty	2.50	30	14	428	88	29	c	
	17		2.19	31	16	467	83	35		
	18		2.00	30	14	495	75	32		35
			Long method					37		
1-14	13	M	1.63	129	C 169	439	163	37	p	
	13		1.53	124	C 174	453	157	34		
	13		1.41	125	C 168	479	145	32		
1-15	18	T	2.50	32	B −136	430	69	29	b	
	18		2.19	32	B −139	468	65	27		
	19		1.97	32	B −128	494	65	36		
			Long method					40		
	17	Ty	2.50	27	16	432	94	32	c	
	17		2.28	26	16	462	88	29		
	17		2.20	26	16	474	86	32		31
1-16	15	M	1.06	106	C 165	563	108	41	p	
	16		1.04	103	C 153	571	103	43		
	16		1.02	99	C 142	578	98	48		
	17	T	2.48	15	A −29	465	78	45	c	
	18		2.20	16	A −28	500	75	48		
	18		2.00	16	A −29	521	70	36		43
1-17	12	M	2.00	132	C 262	349	244	38	d	
	13		1.80	133	C 272	381	230	39		
	13		1.50	127	C 251	445	187	37		
	17	T	2.50	18	A −9	436	99	28	d	
	17		2.21	13	A −16	483	89	24		
	18		1.99	11	A −15	518	88	28		38
1-18	12	M	2.50	109	C 120	330	193	47	d	
	12		2.00	104	C 108	407	154	42		
	13		1.50	101	C 99	498	117	52		
			Long method					58		
1943—Continued										
1-18	18	T	2.21	13	A −8	495	98	47	d	
	18		1.99	13	A 5	520	107	46		46
1-19	12	M	2.50	150	C 251	266	287	48	d	
	12		2.00	153	C 246	345	240	43		
	13		1.50	146	C 231	443	181	46		
	18	T	2.50	39	B −118	414	78	37	d	
	18		2.20	38	B −121	455	73	38		
	17	Ty	2.01	25	42	487	131	45	d	
	17		1.93	25	40	498	123	40		
	18		1.87	25	42	509	123	48		44
1-20	13	M	1.50	165	C 239	430	188	40	p	
	14		1.38	169	C 270	447	189	48		
	14		1.28	159	C 247	474	168	39		
	17	Ty	2.34	21	6	470	77	26	p	
	17		2.20	22	7	490	75	32		
	17		2.00	23	8	513	70	30		
1-21	12	M	2.50	154	C 267	249	300	25	p	
	12		2.00	157	C 254	334	246	33		
	13		1.43	151	C 200	453	163	38		
1-22	17	Ty	2.49	72	37	386	87	46	d	
	17		2.20	83	43	416	81	51		
	17		2.00	90	44	444	77	47		48
1-25	12	M	2.49	155	C 6	321	124	23	p	
	12		2.00	160	C −2	395	104	32		
	13		1.50	157	C 4	477	86	37		
1-27	13	M	1.93	126	C 142	390	171	39	d	
	13		1.50	125	C 136	472	136	44		42
1-28	12	M	2.49	77	C 63	370	144	43	d	
	12		2.00	77	C 59	442	121	47		
	13		1.50	73	C 50	527	92	44		
	17	Ty	2.46	14	7	465	91	21	d	
	17		2.20	15	8	495	84	24		
	17		2.01	15	8	520	80	27		42
1-29	12	M	2.50	91	C 208	314	246	47	d	
	12		2.00	84	C 185	402	192	41		
	13		1.50	80	C 174	497	138	50		46
1-30	12	M	2.49	79	C 203	328	238	37	p	
	12		2.00	76	C 177	409	186	39		
			Long method					62		
2- 6	17	T	2.50	37	B −109	421	82	47	b	
	17		2.19	35	B −111	462	76	43		
	18		2.00	37	B −114	484	71	42		
	16	Ty	2.51	14	3	469	83	34	b	
	17		2.20	14	4	510	77	34		
	17		2.00	14	4	536	72	36		40
2- 7	17	T	2.49	27	B −99	438	83	48	b	
	17		2.19	27	B −99	474	78	45		
	18		2.00	26	B −103	502	73	47		
	16	Ty	2.51	46	23	405	90	41	b	
	17		2.20	44	23	448	83	40		
	17		2.00	43	22	475	77	38		44
2- 8	12	M	2.36	100	C 87	366	161	49	p	
	13		1.91	106	C 86	431	138	53		
	16	Ty	2.50	68	38	385	95	40	c	
	17		2.20	64	33	434	82	45		
	17		1.99	57	27	471	77	43		43
2-10	15	M	1.16	136	C 179	532	126	49	p	
	15		1.13	115	C 183	537	123	37		
	15		1.07	116	C 168	553	111	40		
	20	Ty	1.46	10	62	591	149	61	c	
	20		1.47	10	69	588	157	64		
	20		1.49	11	76	579	167	67		64
2-11	16	Ty	2.51	27	46	414	159	45	b	
	17		2.20	26	44	458	142	45		
	17		2.00	24	40	490	128	40		43
2-12	16	Ty	2.50	22	58	411	193	52	p	
	17		2.19	21	58	458	175	52		
	17		2.00	17	56	496	163	57		
2-13	12	M	2.44	111	C 104	338	180	46	d	
	13		1.99	106	C 97	410	147	46		
	14		1.49	115	C 104	485	122	40		
	17	T	2.51	12	A 15	450	133	46	b	
	17		2.19	12	A 13	488	122	42		
	18		2.00	12	A 8	516	111	43		
			Long method					59		
	16	Ty	2.51	19	17	448	105	33	c	
	16		2.20	19	17	488	98	37		
	17		2.00	18	16	514	92	34		43
			Long method					38		
1943—Continued										
2-14	15	M	1.16	140	C 151	532	115	48	p	
	15		1.07	143	C 166	546	113	47		
	17	T	2.20	20	A −20	482	80	44	b	
	18		2.00	19	A −14	505	83	43		
	18		1.80	20	A −13	531	79	44		44
2-15	12	M	2.51	137	C 227	279	269	41	c	
	13		2.00	138	C 224	359	225	45		
	13		1.50	129	C 199	459	165	46		
			Long method					55		
	17	T	2.20	9	A 11	496	122	44	b	
	18		2.00	10	A 10	525	114	48		
	16	Ty	2.51	16	47	432	175	48	b	
	16		2.20	15	44	476	155	48		
	17		2.00	15	47	502	151	52		47
2-16	13	M	2.00	84	C 161	410	179	47	d	
	13		1.50	85	C 155	495	139	47		
	14		1.43	78	C 148	517	129	50		
	16	Ty	2.50	36	120	320	310	34	d	
	16		2.20	37	113	372	267	34		
	17		2.00	37	107	405	237	28		41
2-17	12	M	2.51	102	C 158	327	217	65	d	
	13		1.99	98	C 134	413	166	56		
	13		1.50	92	C 132	499	130	53		
	17	T	2.50	36	B 139	363	185	41	c	
	17		2.20	35	B 111	409	160	34		
	18		1.83	32	B 99	464	139	39		45
2-18	12	M	2.49	118	C 111	326	188	53	d	
	13		2.00	108	C 92	409	146	45		
	13		1.50	101	C 79	500	109	47		48
2-19	12	M	2.46	86	C 57	374	141	55	c	
	13		1.99	84	C 43	446	113	53		
	13		1.50	72	C 49	531	85	49		
	16	Ty	2.51	44	56	358	161	14	c	
	16		2.20	43	55	406	146	21		
	17		2.00	41	53	440	134	19		38
			Long method					51		
2-20	12	M	2.50	70	B 61	382	136	54	c	
	13		2.00	67	B 51	456	110	47		
	13		1.50	61	B 41	538	83	46		49
2-22	12	M	2.50	115	C 124	319	196	42	d	
	13		1.99	113	C 118	396	161	39		40
2-24	12	M	2.50	127	C 177	299	234	46	d	
	13		2.00	123	C 164	381	189	42		
	13		1.51	105	C 152	477	142	43		44
2-25	12	M	2.49	138	C 187	291	242	47	d	
	13		2.00	136	C 170	368	194	39		
	14		1.50	143	C 163	454	151	41		42
2-26	12	M	2.50	95	C 91	343	169	44	d	
	13		2.00	97	C 84	416	140	42		
	14		1.50	99	C 85	496	110	48		
			Long method					49		
	17	T	2.49	18	A −15	446	93	40	b	
	17		2.19	18	A −16	488	85	41		
	17		2.00	13	A −20	522	81	41		42
2-27	12	M	2.49	91	C 53	366	141	51	d	
	13		1.99	85	C 45	442	115	47		
	14		1.50	83	C 36	521	87	37		
	17	T	2.48	43	B −114	415	81	70	p	
	17		2.00	50	C −47	474	75	49		
	18		1.80	46	C −55	502	67	57		
	17	Ty	1.71	79	54	475	90	36	d	
	17		1.65	79	54	486	89	39		
	20		1.35	75	51	535	78	33		44
2-28	12	M	2.48	109	C 96	343	175	59	p	
	13		1.99	106	C 83	414	140	46		
	14		1.50	96	C 64	508	102	46		
3- 1	13	M	1.80	86	C 52	468	110	46	d	
	14		1.50	92	C 76	503	106	44		
	14		1.43	84	C 68	525	97	43		
	16	T	2.50	19	A −14	439	94	40	d	
	17		2.20	19	A −9	475	93	42		42
3- 2	12	M	2.50	82	C 172	344	220	59	d	
	13		2.00	76	C 147	428	166	54		
	14		1.50	58	C 67	539	102	51		
	16	Ty	2.51	23	19	424	105	18	c	
	16		2.19	24	18	467	94	19		
	16		2.00	23	18	495	88	21		37

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued											
3–3	12	M	2.50	54	B	31	405	114	42	c	
	13		2.00	50	B	19	489	89	40		
	14		1.50	50	B	16	549	69	36		39
3–6	12	M	2.50	89	C	48	365	137	52	d	
	13		2.00	85	C	38	437	111	39		
	14		1.50	83	C	38	523	88	45		
	16	T	2.45	26	B	—55	419	101	36	d	
	17		1.98	30	B	—60	479	87	32		
	17		1.80	32	B	—72	508	80	35		40
3–8	14	M	1.50	63	B	42	536	83	43	d	
	14		1.43	59	B	36	552	77	42		
	15		1.23	57	B	38	582	69	35		40
3–9	12	M	2.50	65	B	32	397	109	44	c	
	13		2.00	63	B	29	467	92	43		
	14		1.50	60	B	30	543	76	42		43
3–10	12	M	2.50	60	B	71	391	154	55	d	
	13		2.00	58	B	62	456	125	54		
	14		1.50	53	B	50	543	89	46		
			Long method						54		
	17	T	2.19	30	B	—12	450	112	47	d	
	17		2.00	32	B	—24	471	102	42		
	17		1.80	33	B	—26	504	86	50		49
3–11	17	M	1.06	51	B	36	626	60	41	p	
	17		1.06	52	B	37	622	61	36		
	17		1.08	53	B	38	616	62	36		
3–12	12	M	2.50	67	B	81	374	163	53	c	
	13		2.00	63	B	71	448	130	48		
	14		1.50	60	B	62	535	99	49		
	17	T	2.00	34	B	—56	475	91	42	c	
	18		1.49	36	B	—87	546	71	41		
			Long method						36		
	15	Ty	2.49	34		24	414	102	31	c	
	16		2.19	34		23	454	93	28		
	16		2.00	32		22	482	87	30		43
3–13	15	Ty	2.50	33		30	401	118	19	d	
	16		1.99	32		28	475	98	25		
	17		1.50	34		25	549	77	30		25
			Long method						48		
3–14	12	M	2.50	77	B	107	360	187	62	p	
	13		2.00	72	B	103	432	155	50		
	14		1.50	70	B	96	519	118	65		
3–15	12	M	2.51	80	C	102	361	170	59	d	
	13		2.00	79	C	95	432	141	48		
	14		1.50	78	C	89	520	109	54		54
3–16	12	M	2.50	86	C	135	348	196	58	d	
	13		2.01	84	C	122	419	158	48		
	14		1.50	76	C	114	519	119	59		55
3–17	13	M	2.00	88	C	140	419	168	57	p	
	13		1.80	85	C	134	449	151	54		
	14		1.50	86	C	145	506	135	57		
3–18	13	M	2.20	122	C	201	342	226	49	d	
	13		2.00	121	C	188	379	202	53		
	14		1.50	121	C	175	470	154	47		
	16	T	2.48	12	A	41	438	165	45	c	
	16		2.19	9	A	39	489	153	45		
	17		2.00	7	A	47	515	154	37		45
3–19	15	M	1.19	178	C	191	497	140	45	p	
	15		1.15	172	C	188	503	135	35		
	15		1.13	173	C	187	507	132	37		
	17	T	1.59	18	A	4	560	91	42	p	
	18		1.51	19	A	15	561	98	39		
	15	Ty	2.50	20		59	415	198	53	c	
	15		2.20	18		58	459	178	51		
	16		2.00	17		57	490	166	53		52
3–20	16	T	2.48	14	A	32	434	151	47	c	
	16		2.20	15	A	31	468	139	46		
	17		1.80	14	A	26	517	121	41		
	15	Ty	2.51	40		74	366	205	46	c	
	16		2.21	40		74	415	186	52		
	16		2.00	37		70	450	170	47		46
3–21	12	M	2.49	146	C	97	307	185	43	d	
	13		2.00	146	C	96	380	155	43		
	14		1.50	149	C	95	464	122	44		43
3–23	16	T	2.46	42	B	53	381	148	48	b	
	16		2.20	40	B	48	423	137	52		
	17		2.00	35	B	52	452	130	45		48
3–25	17	M	1.09	164	C	85	542	89	45	p	
	17		1.10	167	C	77	541	88	50		
	17		1.11	158	C	73	540	86	38		
1943—Continued											
3–25	16	T	2.20	47	C	19	412	121	45	d	
	16		2.00	48	C	18	439	115	41		
	15	Ty	2.49	28		66	378	201	27	d	
	15		2.20	28		65	418	182	21		
	16		2.01	28		65	447	171	25		37
3–26	12	M	2.50	114	C	76	337	164	51	c	
	13		2.00	108	C	61	416	129	47		
	14		1.50	100	C	48	501	96	41		
	15	Ty	2.50	31		62	377	191	28	d	
	16		2.00	29		59	454	158	33		
	17		1.50	37		71	516	141	28		41
3–27	12	M	2.49	122	C	61	337	153	48	c	
	13		2.00	118	C	50	409	125	41		
	14		1.50	121	C	45	493	98	52		47
3–28	12	M	2.49	79	C	45	373	132	45	c	
	13		2.00	75	C	32	447	106	41		
	14		1.50	61	C	37	539	80	41		42
3–29	13	M	2.00	51	B	26	472	95	42	c	
	13		1.80	50	B	23	502	86	37		
	14		1.50	46	B	20	556	73	39		39
3–30	12	M	2.50	21	A	—17	468	89	44	b	
	13		2.00	21	A	—19	529	75	40		
	14		1.50	20	A	—20	606	60	45		43
			Long method						43		
3–31	12	M	2.50	36	A	7	429	104	42	c	
	13		2.00	35	A	5	499	88	48		
	14		1.50	31	A	—3	582	67	50		47
4–1	12	M	2.50	58	B	49	389	132	42	c	
	13		2.00	54	B	41	461	107	40		
	14		1.50	51	B	36	546	83	40		
	15	Ty	2.21	30		153	344	355	35	d	
	16		2.00	29		154	384	331	47		
	16		1.80	29		148	424	296	49		42
4–2	12	M	2.50	40	A	13	424	107	47	b	
	13		2.00	39	A	8	490	89	43		
	14		1.50	36	A	4	568	70	45		45
4–3	12	M	2.49	57	B	46	392	129	38	c	
	13		2.00	55	B	43	457	109	33		
	14		1.50	50	B	37	544	84	39		37
4–4	12	M	2.50	92	C	137	334	200	44	d	
	13		2.00	88	C	137	411	166	45		
	14		1.50	85	C	148	495	136	45		
	18	T	1.26	30	B	—60	585	71	31	d	
	18		1.23	27	8	—65	590	68	29		
	18		1.21	28	B	—67	596	67	29		38
4–5	12	M	2.49	117	C	97	322	178	38	d	
	13		2.00	112	C	89	400	145	33		
	14		1.50	107	C	73	492	107	39		37
4–6	12	M	2.49	78	B	27	387	99	37	c	
	13		2.00	73	B	24	456	83	32		
	14		1.50	66	B	18	542	64	38		36
4–7	12	M	2.50	33	A	—18	447	82	44	b	
	13		2.00	33	A	—18	510	72	43		
	14		1.50	29	A	—22	589	57	44		44
			Long method						43		
4–8	13	M	2.49	29	A	—7	447	94	48	b	
	13		2.00	26	A	—16	522	76	49		
	14		1.50	23	A	—20	597	59	48		48
4–9	13	M	2.50	23	A	—21	461	84	44	b	
	13		2.00	22	A	—23	528	72	47		
	14		1.50	24	A	—16	588	62	40		44
4–10	13	M	2.50	35	A	—8	440	90	50	b	
	13		2.00	33	A	—11	509	77	48		
	14		1.50	28	A	—15	590	61	51		
	15	Ty	2.18	31		96	414	237	58	d	
	15		2.00	27		85	460	205	64		
	16		1.81	31		78	494	178	64		52
4–11	13	M	2.49	47	B	10	425	94	43	b	
	13		2.00	49	B	9	483	81	43		
	14		1.50	57	B	14	551	66	46		
	15	Ty	2.50	33		76	372	219	41	d	
	15		2.20	36		81	411	204	46		
	15		1.99	34		84	438	196	45		44
4–12	13	M	2.50	61	B	28	397	107	38	d	
	14		1.50	42	B	7	562	66	38		
	15	Ty	2.52	45		83	353	221	45	d	
	15		2.00	44		85	423	190	37		
	16		1.49	49		90	505	158	51		41
			Long method						44		
1943—Continued											
4–13	13	M	2.50	39	A	—6	429	90	40	b	
	13		2.00	37	A	—12	501	74	42		
	14		1.50	35	A	—17	578	58	41		
			Long method						43		
	15	Ty	2.51	43		94	348	246	46	c	
	15		2.20	43		95	392	226	46		
	16		2.01	43		96	420	212	48		43
4–14	13	M	2.50	21	A	—19	466	86	44	b	
	13		2.00	20	A	—22	533	74	47		
	14		1.50	18	A	—27	611	56	49		47
4–15	19	Ty	1.10	53		79	585	116	53	d	
	19		1.09	47		74	595	112	54		
	19		1.09	47		69	600	106	55		54
4–16	13	M	2.49	24	A	—12	460	92	45	b	
	13		2.00	25	A	—14	525	78	51		
	14		1.50	22	A	—21	600	59	48		
	16	T	1.99	65	C	155	372	199	37	d	
	16		1.80	71	C	134	406	175	35		
	17		1.50	62	C	115	475	147	43		45
4–17	13	M	2.00	72	8	35	454	93	49	d	
	13		1.80	74	B	38	484	89	44		
	14		1.50	76	B	42	529	79	43		
	15	T	2.51	48	B	172	354	202	51	c	
	16		2.19	42	B	171	397	184	48		
	16		2.00	43	B	169	425	174	47		48
4–18	13	M	2.50	62	B	16	406	95	46	c	
	13		2.00	62	B	16	467	83	38		
	14		1.50	57	B	21	549	70	43		
	16	T	2.21	40	B	102	403	158	37	c	
	16		2.00	43	B	99	428	149	38		
	16		1.80	46	B	94	453	140	35		40
4–19	13	M	2.50	50	B	9	421	92	47	b	
	13		2.00	50	B	9	486	80	50		
	14		1.50	46	B	8	561	64	44		47
4–20	13	M	2.49	28	A	—23	453	80	44	b	
	13		2.00	27	A	—28	527	67	51		
	14		1.50	23	A	—29	600	54	46		47
4–21	13	M	2.50	26	A	—22	454	81	40	b	
	13		2.00	26	A	—26	522	68	37		
	14		1.50	25	A	—26	595	55	36		38
			Long method						29		
4–22	13	M	2.49	22	A	—22	465	84	41	b	
	13		2.00	20	A	—24	531	72	45		
	14		1.50	20	A	—24	603	58	48		
	15	T	2.51	68	C	—36	374	96	30	c	
	16		2.00	66	C	—35	440	85	34		
	17		1.50	81	D	26	498	79	36		
	15	Ty	2.51	48		54	375	152	33	d	
	15		2.20	54		67	402	158	40		
	15		2.00	58		75	421	159	39		40
4–23	15	T	2.49	93	D	24	361	95	48	d	
	15		2.21	96	D	25	397	88	45		
	16		2.00	100	D	25	423	82	44		46
4–24	17	T	1.50	95	D	59	483	108	46	c	
	17		1.42	92	D	58	501	105	45		
	17		1.37	88	D	54	510	101	42		44
4–25	15	Ty	2.48	80		83	333	177	40	d	
	15		2.20	81		84	376	163	46		
	15		2.00	82		84	407	151	51		46
4–26	13	M	2.50	36	A	—9	438	89	51	c	
	13		2.00	35	A	—13	508	74	52		
	14		1.50	32	A	—20	587	57	51		
	15	T	2.50	69	C	56	357	159	72	d	
	15		2.20	66	C	58	399	148	71		
	16		2.00	68	C	47	426	135	64		54
4–27	13	M	2.50	36	A	—3	436	94	45	b	
	13		2.00	35	A	—7	503	80	44		
	14		1.50	33	A	—10	583	62	48		
	16	T	1.80	107	D	50	444	102	57	d	
	16		1.65	100	D	45	472	96	48		
	17		1.50	104	D	44	494	89	49		
	14	Ty	2.49	31		75	380	217	42	c	
	15		1.99	34		74	451	179	46		
	16		1.41	46		74	535	133	49		47
4–28	13	M	2.50	48	A	28	409	117	37	c	
	13		2.00	45	A	19	478	95	36		
	14		1.50	43	A	17	562	75	46		40
			Long method						45		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued										
4–29	13	M	2.50	41	A 5	428	98	50	c	
	13		2.00	40	A 1	499	83	54		
	14		1.50	34	A —6	579	64	51		
	15	T	2.50	88	D 34	260	113	60	c	
	15		2.20	90	D 30	400	98	50		
	16		2.00	89	D 29	428	91	51		53
4–30	13	M	2.50	31	A —14	447	86	48	b	
	13		2.00	30	A —17	517	74	51		
	14		1.50	27	A —21	593	58	49		49
5– 1	13	M	2.50	24	A —27	466	79	49	b	
	13		2.00	22	A —31	535	66	54		
	14		1.50	21	A —30	606	54	51		
	16	T	1.68	33	8 —62	524	80	40	d	
	16		1.60	34	B —53	537	82	47		
	17		1.49	37	B —61	551	78	49		50
5– 2	13	M	2.49	20	A —24	471	82	45	b	
	13		2.00	19	A —29	539	69	48		
	14		1.50	18	A —29	611	55	49		47
5– 4	13	M	2.00	53	B 9	478	78	36	d	
	14		1.80	54	B 11	505	74	41		38
5– 5	13	M	2.50	37	A —18	438	80	43	b	
	13		2.00	37	A —19	504	69	44		
	14		1.50	35	A —17	580	57	44		
			Long method					43		
	14	Ty	2.50	49	89	360	228	67	d	
	15		2.20	46	91	400	213	63		
	15		2.00	48	89	429	194	59		47
5– 6	13	M	2.50	34	A —15	442	84	48	c	
	13		2.00	35	A —14	506	73	50		
	15		1.50	29	A —23	591	56	51		
	15	T	2.50	81	D 26	365	105	50	c	
	16		1.99	85	D 25	429	88	48		
	17		1.49	98	D 22	505	70	44		49
			Long method					40		
5– 7	13	M	2.50	35	A 4	434	100	45	c	
	13		2.00	36	A 5	499	88	48		
	15		1.50	35	A 0	578	67	51		
	14	Ty	2.49	64	70	360	169	51	c	
	15		2.00	61	67	434	141	49		
	16		1.50	57	58	518	107	44		48
5– 8	14	Ty	2.50	52	119	315	287	50	c	
	15		2.20	47	106	377	242	46		
	15		2.00	47	104	413	221	50		49
5–10	13	M	2.50	63	8 16	408	92	49	c	
	13		2.00	52	B 5	481	75	41		
	15		1.50	51	8 4	559	59	49		46
5–11	13	M	2.50	32	A —23	447	79	47	b	
	13		2.00	31	A —25	515	67	48		
	15		1.50	27	A —25	592	55	51		
	15	T	2.50	14	A —12	435	100	17	c	
	15		2.20	14	A —15	479	91	27		
	16		1.99	14	A —14	507	86	25		44
5–12	13	M	2.49	21	A —30	472	77	45	b	
	13		2.00	19	A —34	540	65	47		
	15		1.50	17	A —34	613	53	46		
	16	T	1.61	41	B—121	524	63	31	c	
	16		1.50	41	B—135	544	57	40		
	17		1.42	42	B—132	553	57	37		43
5–13	13	M	2.50	9	A —34	509	79	46	b	
	13		2.00	9	A —38	573	66	48		
	15		1.50	4	A —41	650	52	49		48
			Long method					45		
5–14	13	M	2.50	33	A 2	436	100	41	c	
	13		2.00	29	A —7	513	82	46		
	15		1.50	27	A —12	591	63	49		
	16	Ty	1.42	28	40	575	101	49	d	
	16		1.36	31	39	582	96	50		
	16		1.31	27	48	582	106	44		46
5–15	13	M	2.49	22	A —16	464	90	42	b	
	13		2.00	20	A —20	533	75	48		
	14		1.80	21	A —22	560	69	47		46
5–16	13	M	2.49	35	A 2	432	99	41	b	
	14		2.00	38	A 4	494	86	44		
	15		1.50	37	A 4	571	70	48		
	16	Ty	1.45	34	63	546	128	44	c	
	16		1.39	34	63	555	124	42		
	16		1.34	31	59	566	119	42		44
1943—Continued										
5–17	13	M	2.50	42	A 12	418	107	35	b	
	14		2.00	41	A 11	485	90	39		
	15		1.50	40	A 10	563	72	43		
	14	Ty	2.49	23	90	370	258	34	d	
	15		2.21	23	86	416	229	39		
	15		2.01	22	82	448	208	35		38
5–18	13	M	2.50	20	A —15	464	91	42	b	
	14		2.00	20	A —18	533	77	46		
	15		1.50	22	A —18	600	61	49		
	14	Ty	2.50	27	88	368	249	39	d	
	15		2.20	27	94	408	238	42		
	15		2.00	28	100	431	233	43		45
5–19	14	M	1.80	30	A —31	551	60	53	d	
	15		1.54	27	A —29	590	54	50		
	15	Ty	2.01	17	149	414	334	54	d	
	15		1.80	16	145	452	301	55		
	16		1.49	17	148	508	266	62		54
5–20	13	M	2.50	33	A —23	452	78	54	c	
	14		2.00	32	A —25	520	67	55		
	15		1.50	29	A —28	593	53	52		54
5–21	13	M	2.50	31	A —22	453	79	48	b	
	14		2.00	28	A —28	523	66	48		
	15		1.50	26	A —30	598	52	49		48
			Long method					39		
5–22	14	M	1.71	20	A —36	579	56	49	b	
	15		1.58	19	A —37	599	52	48		
	15		1.50	19	A —38	611	50	45		47
5–24	14	Ty	2.20	100	110	321	191	27	d	
	15		2.00	100	112	352	182	27		
	15		1.80	103	117	384	172	41		32
5–25	13	M	2.50	59	8 25	404	105	44	c	
	14		2.00	57	8 21	470	88	40		
	14		1.80	61	B 25	495	83	45		43
5–26	13	M	2.49	19	A —30	478	78	47	b	
	14		2.00	17	A —32	542	67	48		
	14		1.80	17	A —32	573	63	50		
	14	Ty	2.50	75	88	318	195	29	d	
	14		2.21	76	91	359	181	32		
	15		2.01	77	91	394	169	40		45
5–30	14	Ty	2.50	50	73	363	193	48	d	
	14		2.20	52	77	405	180	51		
	15		2.00	54	72	441	157	60		53
6– 1	15	T	2.51	149	D 23	337	60	60	c	
	15		2.00	159	D 25	409	52	68		
	16		1.50	159	D 23	481	45	55		61
6– 3	14	Ty	2.50	70	65	360	147	56	c	
	15		1.99	71	65	434	127	58		
	16		1.49	67	62	518	105	52		55
			Long method					66		
6– 4	13	M	2.50	8	A —39	513	73	46	c	
	14		2.00	7	A —42	583	63	57		
			Long method					39		
	16	T	1.74	45	C 10	473	110	25	d	
	16		1.63	42	C 1	494	93	24		
	16		1.50	47	C 7	505	93	21		
	14	Ty	2.50	70	60	372	138	64	c	
	15		2.00	75	59	439	111	59		
	16		1.50	79	59	515	92	59		52
6– 5	13	M	2.50	7	A —36	522	78	65	p	
	14		2.00	7	A —37	583	67	63		
	14		1.81	6	A —36	608	64	58		
	15	T	2.19	33	8 —96	441	81	19	d	
	15		2.00	33	B —99	468	76	22		
	16		1.81	36	8 —84	486	78	24		
	15	Ty	1.56	64	60	508	107	48	c	
	16		1.48	68	64	516	106	48		
	17		1.41	70	66	526	104	45		40
6– 6	13	M	2.50	15	A —25	482	84	44	b	
	14		2.00	15	A —29	548	70	46		
	15		1.55	15	A —32	617	55	50		
	14	Ty	2.49	88	89	313	183	28	p	
	15		2.00	90	104	370	178	28		
	16		1.50	97	127	441	170	43		47
6– 7	13	M	2.51	8	A —36	513	77	41	p	
	14		2.19	8	A —28	548	77	47		
	14	Ty	2.51	102	121	266	228	35	d	
	14		2.21	98	120	312	212	31		
	15		2.01	103	128	340	204	45		37
1943—Continued										
6– 8	16	M	1.43	49	B 2	575	58	45	d	
	17		1.43	52	B 4	571	58	48		
	17		1.45	52	B 3	567	57	46		
	15	T	2.49	26	8 —83	421	90	32	d	
	15		2.00	27	8 —82	482	81	34		
	16		1.50	28	8 —95	552	67	35		
	14	Ty	2.51	85	105	289	218	25	d	
	14		2.21	87	103	339	194	29		
	15		2.01	88	103	374	179	36		41
6– 9	15	T	2.20	33	8 13	448	121	62	d	
	15		2.00	34	B —2	476	110	63		
	16		1.80	34	B —8	506	102	63		
	14	Ty	2.51	101	130	270	239	59	d	
	14		2.20	108	132	317	217	61		
	15		2.00	108	132	350	203	62		62
6–10	14	M	2.01	52	B 8	484	78	48	p	
	14		1.80	55	B 11	507	74	44		
	15		1.50	43	B —1	583	59	65		
	15	T	2.51	52	C 82	353	176	60	d	
	15		2.00	54	C 74	424	149	54		
	16		1.50	63	C 72	482	128	54		56
6–11	13	M	2.52	47	8 1	426	85	48	c	
	14		2.00	49	B 1	491	73	48		
	14		1.80	46	8 2	516	71	45		47
6–12	13	M	2.50	16	A —33	484	75	45	b	
	14		2.01	17	A —38	549	63	47		
	15		1.50	19	A —32	614	52	53		48
			Long method					50		
6–13	15	T	2.50	84	C 41	337	152	51	d	
	15		2.00	78	C 33	419	128	61		
	16		1.50	74	C 33	501	110	57		56
6–14	13	M	2.50	15	A —40	491	70	59	c	
	14		2.00	14	A —42	560	61	51		
	15		1.50	14	A —43	627	48	50		
	14	Ty	2.52	54	52	386	139	59	d	
	14		2.20	56	53	430	128	62		
	15		2.00	56	54	452	123	54		55
6–15	13	M	2.40	11	A —37	516	74	44	c	
	14		2.01	12	A —34	563	68	54		
	14		1.80	11	A —33	593	64	54		
	15	T	2.50	44	C —7	401	113	60	d	
	15		2.00	46	C 3	454	105	49		
	16		1.49	57	C 24	512	103	45		
	14	Ty	2.46	47	36	410	113	48	b	
	14		2.20	46	34	445	102	47		
	15		2.00	45	33	471	95	40		48
6–16	15	T	2.50	65	C 32	357	141	51	c	
	16		1.78	66	C 15	459	108	43		
	16		1.50	65	C 4	509	74	43		46
6–17	15	T	2.50	56	C 25	364	135	46	c	
	15		2.00	55	C 39	425	128	40		
	16		1.50	53	C 17	513	99	40		42
6–18	15	T	2.21	28	B —45	463	99	53	c	
	15		2.00	27	B —51	494	91	59		
	16		1.50	27	8 —57	568	77	59		57
6–21	15	T	2.48	36	8 —84	420	92	50	b	
	15		2.20	34	B —84	456	85	47		
	15		2.00	35	8 —94	484	78	48		48
6–22	13	M	2.50	49	8 2	427	85	49	c	
	14		2.01	46	B 1	491	74	49		
	16		1.50	45	A —18	577	57	49		
	15	T	2.50	66	C 99	337	191	65	d	
	15		2.21	69	C 87	381	168	63		
	15		2.00	69	C 82	411	156	59		52
6–23	13	M	2.50	10	A —42	509	70	45	b	
	14		2.01	9	A —44	574	61	50		
	14		1.80	9	A —46	604	57	54		
	15	T	2.51	44	8 5	400	131	71	d	
	15		2.20	38	B —4	445	117	61		
	16		1.80	35	B —24	510	97	62		53
6–24	13	M	2.50	8	A —43	518	71	49	a	
	14		2.00	7	A —45	578	61	46		
	16		1.50	8	A —40	643	51	52		49
			Long method					44		
6–25	14	M	2.19	25	A —26	503	73	50	b	
	14		2.00	24	A —29	529	67	48		
	16		1.49	25	A —31	603	52	50		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued											
6–25	15	T	2.50	20	A	11	431	123	44	b	
	15		2.00	19	A	6	497	103	43		
	16		1.49	23	A	2	570	83	48		47
			Long method						43		
6–26	14	M	2.00	29	A	—31	525	64	53	c	
	16		1.50	29	A	—27	595	54	52		52
6–28	15	T	2.20	38	B	—46	445	101	49	b	
	15		2.00	39	B	—45	470	96	47		
	16		1.80	33	B	—59	510	84	52		49
6–29	16	T	1.80	31	B	—36	517	92	60	d	
	16		1.66	31	B	—45	540	85	60		
	16		1.50	29	B	—55	565	78	52		57
6–30	15	T	2.20	37	B	—75	457	89	54	c	
	15		2.00	37	B	—78	485	84	56		
	16		1.80	37	B	—83	513	78	59		56
7– 1	15	T	2.20	25	A	5	468	103	59	b	
	15		1.99	25	A	7	499	100	59		
	16		1.80	25	A	7	522	95	59		59
7– 2	15	T	2.21	31	B	20	438	123	40	c	
	15		2.00	33	B	19	461	117	44		
	16		1.80	35	B	—1	498	104	50		45
7– 3	15	T	2.51	27	B	—54	426	102	58	c	
	15		2.20	26	B	—61	467	93	50		
	15		2.01	28	B	—59	491	89	54		54
7– 4	14	M	2.19	56	B	3	454	76	39	c	
	14		2.00	59	B	8	478	73	41		
	16		1.50	49	B	—2	563	57	44		
	15	T	2.20	34	B	—56	451	96	47	c	
	15		2.00	39	B	—56	475	92	52		
	16		1.80	40	B	—58	501	87	50		45
7– 5	13	M	2.50	38	A	—18	433	79	46	b	
	14		2.00	39	A	—21	502	67	52		
	16		1.50	42	A	—15	571	56	50		
	15	T	2.20	13	A	—13	502	92	54	c	
	15		2.00	13	A	—15	527	86	51		
	16		1.80	12	A	—18	559	80	49		50
7– 6	13	M	2.50	49	B	0	429	82	45	b	
	14		2.00	44	A	—13	497	71	51		
	14		1.80	44	A	—18	528	63	50		49
7– 7	13	M	2.49	33	A	—5	440	94	45	b	
	14		2.00	31	A	—7	507	81	48		
	15		1.50	34	A	—14	585	59	56		49
7– 8	13	M	2.50	43	A	—1	426	92	45	b	
	14		2.00	41	A	—7	493	76	47		
	15		1.50	44	A	—12	571	58	52		
	15	T	2.20	36	B	—70	446	92	38	d	
	15		2.00	39	B	—67	471	88	45		45
7– 9	13	M	2.50	38	A	—17	440	80	51	b	
	14		2.00	39	A	—21	505	67	52		
	15		1.50	36	A	—16	575	58	47		
	15	T	2.20	32	B	—80	459	87	46	b	
	15		2.00	31	B	—84	488	80	47		
	16		1.80	31	B	—92	518	73	49		49
7–10	13	M	2.50	5	A	—44	534	71	51	a	
	14		2.00	4	A	—45	593	62	51		
	15		1.50	3	A	—46	664	49	56		
			Long method						53		
	15	T	2.50	53	C	—18	384	106	45	b	
	15		2.00	52	C	—22	452	91	43		
	16		1.50	55	C	—23	526	78	49		49
7–11	13	M	2.49	26	A	—23	458	80	43	c	
	14		2.00	24	A	—28	530	68	48		
	15		1.50	17	A	—19	607	62	47		
	15	T	2.50	87	D	40	356	119	46	c	
	15		2.20	89	D	37	394	106	44		
	15		2.00	86	D	34	425	99	51		46
7–12	13	M	2.50	24	A	—23	462	83	42	b	
	14		2.00	23	A	—28	530	68	48		
	15		1.50	24	A	—27	600	55	49		46
7–13	13	M	2.50	45	A	—8	424	85	43	c	
	14		2.00	43	A	—12	491	72	43		
	15		1.59	46	A	—9	550	61	43		43
7–15	15	T	2.47	35	B	—66	415	99	40	c	
	15		1.99	32	B	—52	479	92	41		
	16		1.50	30	B	—85	559	70	46		42
7–16	14	M	2.20	82	C	66	396	136	29	p	
	14		2.01	80	C	71	427	128	33		
	14		1.80	80	C	71	458	118	35		
1943—Continued											
7–16	15	T	2.50	65	C	52	337	156	25	d	
	15		2.00	63	C	48	406	135	26		
	16		1.50	57	C	17	506	100	36		29
			Long method						37		
7–17	15	T	2.20	45	C	15	419	118	40	c	
	15		2.00	45	C	19	445	114	41		
	16		1.80	46	C	13	475	105	42		41
7–18	13	M	2.52	18	A	—35	478	73	47	b	
	14		2.00	19	A	—36	540	64	46		
	15		1.50	18	A	—34	611	52	47		
	15	T	2.50	26	B	—58	425	101	46	b	
	15		2.20	24	B	—71	472	89	49		
	16		2.00	23	B	—67	498	86	52		48
7–19	13	M	2.49	20	A	—31	474	76	44	b	
	14		2.00	19	A	—36	543	64	47		
	15		1.50	18	A	—35	616	51	50		
	15	T	2.20	96	D	93	346	175	46	c	
	15		2.00	89	D	95	385	161	51		
	16		1.80	98	D	95	406	155	44		47
7–20	13	M	2.43	26	A	—26	467	78	52	b	
	14		2.00	27	A	—25	525	69	48		
	15		1.50	24	A	—28	598	54	46		
	15	T	2.19	76	D	67	387	151	48	c	
	15		2.00	77	D	66	416	141	45		
	16		1.80	83	D	68	438	134	44		48
7–21	15	M	1.62	26	A	—27	578	56	46	d	
	15		1.50	24	A	—31	602	53	51		48
7–22	13	M	2.48	11	A	—39	503	73	45	c	
	14		2.00	10	A	—42	572	62	50		49
7–23	15	M	1.50	16	A	—28	618	56	51	c	
	16		1.41	16	A	—29	630	53	46		
	16		1.38	18	A	—30	635	52	46		
	15	T	2.51	104	D	38	344	108	47	c	
	15		2.20	100	D	34	393	97	53		
	15		2.00	96	D	30	423	90	50		49
7–24	13	M	2.49	10	A	—39	507	73	42	b	
	14		2.00	9	A	—42	571	63	48		
	15		1.50	8	A	—43	641	50	51		47
			Long method						40		
7–25	13	M	2.20	9	A	—42	548	66	51	c	
	14		2.00	9	A	—43	572	62	47		
	14		1.79	8	A	—45	605	57	50		49
7–27	13	M	2.50	41	A	—15	436	80	43	c	
	14		2.00	40	A	—16	500	70	50		
	15		1.49	39	A	—16	575	57	50		48
7–29	14	M	1.69	37	A	—21	552	59	54	d	
	15		1.50	38	A	—19	571	54	55		54
7–30	13	M	2.48	42	A	—14	438	81	51	c	
	14		2.00	40	A	—16	502	70	52		
	15		1.60	39	A	—14	562	60	53		52
7–31	14	M	1.96	31	A	—25	525	66	53	b	
	14		1.79	31	A	—25	547	63	50		
	15		1.49	32	A	—23	592	55	54		52
8– 1	13	M	2.51	17	A	—27	479	81	52	b	
	14		2.00	17	A	—34	548	66	51		
	15		1.50	17	A	—34	619	53	52		52
8– 2	13	M	2.50	14	A	—37	489	74	45	b	
	14		1.74	12	A	—36	592	58	46		
	15		1.49	11	A	—36	634	53	50		
	15	T	2.49	54	C	—10	387	112	47	b	
	15		2.20	50	C	—11	426	102	48		
	16		2.00	45	C	—13	457	95	47		47
8– 3	13	M	2.50	27	A	0	451	102	48	b	
	14		2.00	27	A	—11	517	80	49		
	15		1.50	25	A	—14	593	62	51		
	15	T	2.50	41	B	—4	394	126	52	d	
	15		2.20	38	B	—7	433	116	43		
	16		1.99	41	B	—4	456	111	41		48
8– 4	13	M	2.48	29	A	—9	449	93	45	b	
	14		1.99	26	A	—9	514	81	42		
	15		1.50	29	A	11	579	77	45		
	15	T	2.50	77	D	59	341	151	49	c	
	15		2.20	85	D	69	375	148	52		
	16		1.99	84	D	62	413	134	52		46
8– 5	13	M	2.50	11	A	—38	503	73	41	c	
	14		2.00	10	A	—41	571	63	50		
	15		1.50	10	A	—24	629	61	47		46
8– 6	13	M	2.50	8	A	—40	523	73	52	c	
	14		2.00	8	A	—40	579	64	55		53
1943—Continued											
8– 7	17	M	1.29	37	A	—6	607	57	46	d	
	17		1.30	36	A	—9	607	56	40		
	15	T	2.20	73	D	44	398	123	49	c	
	16		2.00	69	D	40	428	113	46		
	16		1.80	74	D	40	456	105	51		47
8– 8	14	M	1.80	39	A	—9	527	71	51	c	
	15		1.50	36	A	—13	575	62	47		
	15		1.44	34	A	—10	589	60	42		
	15	T	2.49	100	D	59	332	137	46	d	
	15		2.20	115	D	64	366	126	55		
	16		2.00	106	D	58	399	118	47		48
8– 9	13	M	2.20	34	A	—26	480	69	37	c	
	14		2.00	34	A	—26	510	65	44		
	15		1.50	34	A	—25	579	53	45		42
8–10	17	M	1.27	26	A	—33	635	48	46	d	
	17		1.28	26	A	—30	634	49	47		46
8–11	13	M	2.49	15	A	—32	490	78	44	c	
	13		2.00	14	A	—35	557	66	54		
	15		1.46	15	A	—34	630	53	51		50
8–12	13	M	2.49	21	A	—25	475	81	47	b	
	13		2.00	20	A	—28	541	69	51		
	15		1.50	18	A	—33	612	53	48		49
			Long method						48		
8–16	13	M	2.49	8	A	—25	510	87	47	b	
	13		2.00	10	A	—28	561	73	47		
	14		1.50	10	A	—28	630	58	45		46
8–19	14	M	1.80	54	B	12	511	76	49	c	
	14		1.50	54	B	10	558	63	49		
	15		1.43	57	B	16	566	65	48		
	15	T	2.49	67	C	—4	368	118	37	c	
	16		2.00	67	C	—14	431	98	38		
	17		1.49	68	C	—18	512	83	42		45
			Long method						34		
8–20	15	T	2.47	62	C	—2	381	117	57	d	
	15		2.20	57	C	—6	417	106	50		
	16		2.00	56	C	—12	451	98	53		53
8–21	15	M	1.30	44	A	4	598	62	50	p	
	16		1.27	41	A	—14	609	52	53		
	16	T	2.20	12	A	—9	501	98	50	d	
	16		2.00	12	A	—11	527	91	49		50
8–22	13	M	2.49	8	A	—41	525	72	57	d	
	13		1.99	7	A	—44	585	62	52		
	14		1.50	5	A	—43	652	50	53		
	15	T	2.49	13	A	—19	462	92	47	b	
	16		2.20	13	A	—16	501	90	50		
	16		2.00	13	A	—18	528	83	50		50
8–23	13	M	2.51	10	A	—36	508	76	53	b	
	13		2.00	9	A	—42	575	63	54		
	14		1.50	7	A	—41	646	51	51		
	15	T	2.50	21	A	—11	442	95	60	c	
	16		2.20	21	A	—13	482	86	57		
	16		2.00	20	A	—14	511	82	53		54
8–24	13	M	2.50	4	A	—45	525	71	51	b	
	13		2.00	3	A	—46	600	61	52		
	14		1.50	1	A	—47	666	49	53		
	15	T	2.50	31	B	—95	431	85	54	b	
	16		2.20	31	B	—103	470	77	53		
	16		2.00	31	B	—95	497	76	57		53
8–25	13	M	2.50	3	A	—41	547	74	57	b	
	14		2.00	2	A	—42	606	65	55		
	15		1.50	0	A	—44	671	51	50		
			Long method						47		
	15	T	2.50	46	B	—111	413	84	63	c	
	16		2.20	43	B	—111	447	78	50		
	16		2.00	46	B	—116	476	73	57		55
8–26	13	M	2.48	6	A	—14	517	98	51	b	
	13		1.99	5	A	—20	582	81	54		
	14		1.50	3	A	—22	651	64	52		52
8–27	13	M	2.50	10	A	11	491	120	42	d	
	13		1.98	8	A	1	566	95	50		
	14		1.66	7	A	—9	620	77	52		48
8–28	13	M	2.51	9	A	—16	506	96	52	c	
	13		2.00	9	A	—20	572	80	61		
	14		1.50	7	A	—23	642	62	58		57
8–29	13	M	2.51	16	A	—7	475	99	54	b	
	13		2.01	16	A	—11	544	83	52		
	14		1.50	14	A	—17	620	64	51		52

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued											
8–30	13	M	2.51	28	A	−1	443	101	41	c	
	13		2.00	25	A	−7	518	83	44		
	14		1.50	22	A	−13	597	64	46		
	15	T	2.51	36	B	−98	417	86	49	c	
	16		1.94	41	B	−77	482	84	49		
	17		1.47	48	B	−89	539	72	50		46
			Long method						15		
8–31	13	M	2.50	37	A	28	411	122	21	p	
	13		2.00	36	A	24	481	103	24		
	14		1.50	36	A	23	559	82	37		27
9–1	13	M	2.50	20	A	−18	466	89	40	c	
	13		2.00	20	A	−25	539	71	48		
	14		1.50	20	A	4	599	75	48		
	15	T	2.51	86	D	40	344	121	40	c	
	16		2.19	88	D	43	389	115	44		
	16		2.00	86	D	42	415	109	43		44
9–2	13	M	2.50	25	A	−9	454	95	45	b	
	13		1.99	24	A	−12	525	80	46		
	14		1.50	22	A	−13	599	64	49		47
9–3	13	M	2.51	21	A	−9	461	96	43	c	
	13		2.00	16	A	−22	540	75	49		
	14		1.50	13	A	−25	620	59	48		
	15	T	2.50	82	D	37	351	118	43	c	
	16		2.20	82	D	35	396	107	47		
	16		2.00	86	D	40	413	106	38		45
9–4	12	M	2.51	12	A	−19	490	91	48	c	
	13		2.00	11	A	−24	560	75	51		
	14		1.50	9	A	−31	640	56	54		
	16	T	2.00	80	D	25	431	91	49	c	
	16		1.80	78	D	20	461	81	45		
	17		1.50	97	D	32	494	80	42		48
9–5	12	M	2.51	8	A	−35	514	78	53	b	
	13		1.99	8	A	−36	577	67	50		
	14		1.50	6	A	−38	646	53	50		
	16	T	2.20	64	C	23	398	126	44	b	
	16		2.01	61	C	13	431	113	45		
	16		1.80	59	C	11	462	106	44		
	15	Ty	2.46	102		107	298	200	45	d	
	15		2.00	103		108	373	173	57		
	16		1.50	95		98	465	134	48		48
9–6	12	M	2.51	11	A	−32	501	79	49	b	
	13		1.99	10	A	−35	567	67	49		
	14		1.50	10	A	−33	635	55	50		
	15	T	2.49	93	D	104	280	208	26	p	
	16		2.20	95	D	105	324	191	26		
	16		2.01	94	D	103	356	177	25		
	15	Ty	2.47	91		111	287	221	27	d	
	15		1.99	92		119	357	198	36		
	16		1.81	96		124	385	190	46		46
9–7	12	M	2.52	8	A	−30	512	82	52	b	
	13		2.00	8	A	−34	575	69	50		
	14		1.50	6	A	−36	649	54	50		
	15	T	2.50	44	C	36	371	141	38	c	
	16		2.21	46	C	36	412	132	44		
	16		2.00	46	C	34	436	124	45		48
9–8	12	M	2.51	28	A	−15	448	87	39	c	
	13		2.00	29	A	−16	515	75	43		
	14		1.50	28	A	−16	587	62	46		43
9–9	12	M	2.51	34	A	0	432	98	38	c	
	13		2.00	32	A	−6	505	81	39		
	14		1.50	31	A	−11	581	65	40		39
			Long method						46		
9–11	16	M	1.17	74	B	107	557	100	29	p	
	16		1.15	66	B	78	576	84	32		
	16		1.13	65	B	58	592	70	43		
9–12	15	M	1.23	34	A	−19	627	51	45	d	
	15		1.16	37	A	−24	637	47	48		
	16		1.12	28	A	−33	651	45	41		
	16	T	2.28	103	D	83	342	161	61	d	
	16		2.00	110	D	73	379	134	51		
	16		1.80	109	D	73	416	128	45		48
9–13	12	M	2.48	13	A	−29	498	81	51	c	
	13		2.00	10	A	−34	562	68	47		
	14		1.50	9	A	−35	635	54	50		49
9–14	12	M	2.50	7	A	−35	515	79	49	b	
	13		2.00	7	A	−37	580	67	50		
	14		1.50	5	A	−38	648	54	51		
1943—Continued											
9–14	15	T	2.50	30	B	−62	423	100	51	c	
	16		2.20	30	B	−62	460	93	47		
	16		1.80	36	B	−48	501	90	42		49
9–15	12	M	2.48	10	A	−10	500	100	48	b	
	13		1.99	10	A	−11	561	86	50		
	14		1.50	9	A	−12	630	69	50		49
9–17	12	M	2.51	33	A	−1	437	98	49	c	
	13		2.00	30	A	−8	516	81	52		
	14		1.50	27	A	−9	588	65	51		
	16	T	2.50	26	A	−16	441	85	57	c	
	16		2.00	26	A	−19	505	73	56		
	17		1.50	25	A	−23	579	61	54		
			Long method						69		
	15	Ty	2.51	133		121	246	212	34	d	
	15		2.00	133		123	334	180	50		
	16		1.80	120		121	376	167	52		51
9–18	12	M	2.49	29	A	−16	450	86	46	b	
	13		2.00	32	A	−12	513	77	53		
	14		1.50	28	A	−16	590	60	50		
	15	Ty	2.50	80		82	319	176	17	d	
	15		2.02	79		81	396	150	27		
	16		1.50	82		83	479	123	36		46
			Long method						76		
9–19	12	M	2.50	16	A	−32	490	76	56	b	
	13		1.99	14	A	−37	559	65	55		
	14		1.50	13	A	−36	629	52	51		54
9–20	12	M	2.50	31	A	27	436	124	49	p	
	16		1.10	36	A	52	635	74	41		
	16		1.09	40	A	62	637	76	46		
9–23	12	M	2.50	19	A	−19	472	88	35	c	
	13		2.00	18	A	−24	538	73	46		
	14		1.50	15	A	−28	620	57	52		44
9–24	12	M	2.50	12	A	−32	501	79	52	a	
	13		2.00	10	A	−34	563	68	49		
	13		1.50	9	A	−34	635	55	51		51
9–25	12	M	2.52	10	A	−28	500	84	43	c	
	13		1.99	9	A	−31	569	71	48		
	13		1.50	8	A	−34	642	55	50		47
			Long method						44		
9–26	12	M	2.51	12	A	−13	481	97	39	c	
	13		1.99	11	A	−18	553	80	45		
	13		1.50	9	A	−25	634	61	49		44
9–27	12	M	2.51	12	A	−22	489	88	44	c	
	13		2.20	13	A	−25	553	74	48		
	13		1.50	10	A	−30	629	57	46		46
9–28	12	M	2.51	7	A	−35	521	79	45	b	
	13		2.00	7	A	−38	579	66	49		
	13		1.50	5	A	−39	650	53	47		
	16	T	2.51	69	D	5	390	81	54	c	
	16		2.21	73	D	6	425	75	54		
	16		2.00	80	D	6	448	69	54		49
9–29	12	M	2.51	17	A	−5	469	102	46	c	
	13		2.00	16	A	−9	541	85	51		
	13		1.50	14	A	−12	616	67	51		
	16	T	2.50	54	C	3	375	121	50	d	
	16		2.20	60	C	9	405	117	43		
	16		2.00	63	C	12	431	113	47		48
10–1	12	M	2.51	29	A	29	432	128	41	c	
	12		2.00	28	A	19	504	102	42		
	13		1.50	25	A	8	585	76	54		
	18	Ty	1.30	129		104	482	119	56	d	
	18		1.26	128		99	489	115	47		
	19		1.24	126		94	502	110	42		47
10–2	12	M	2.50	16	A	13	466	118	44	c	
	12		2.00	14	A	−2	544	92	51		
	13		1.50	12	A	−15	626	66	55		50
10–3	12	M	2.50	18	A	9	466	114	43	b	
	12		2.00	18	A	5	533	95	48		
	13		1.50	16	A	0	606	74	48		46
10–4	12	M	2.51	20	A	8	457	113	40	c	
	12		1.99	18	A	1	530	92	42		
	13		1.50	16	A	−4	609	71	49		
	15	Ty	2.50	118		112	260	202	22	p	
	15		2.20	119		116	306	188	33		
	16		2.00	121		116	343	174	55		44
10–5	14	M	1.42	23	A	26	603	83	47	d	
	14		1.26	26	A	35	620	79	40		43
10–6	12	M	2.51	11	A	−20	493	90	44	c	
	12		2.00	10	A	−22	559	77	49		47
1943—Continued											
10–7	12	M	2.50	12	A	−14	484	96	38	c	
	12		2.00	11	A	−19	553	79	42		
	13		1.50	11	A	−19	625	63	48		43
10–8	12	M	2.51	21	A	5	449	109	33	d	
	12		2.00	21	A	3	523	92	42		
	13		1.50	17	A	3	598	75	41		
	16	T	2.51	37	B	−47	398	108	38	c	
	16		2.20	40	B	−50	437	100	41		
	16		2.01	35	B	−49	466	94	37		39
10–11	16	T	2.50	39	B	−56	412	104	61	d	
	16		2.20	42	B	−50	446	100	61		
	16		2.00	31	B	−50	483	93	54		59
10–12	12	M	2.50	15	A	−7	479	100	36	c	
	12		2.00	13	A	−14	550	82	47		
	13		1.50	10	A	−24	626	61	48		
	16	T	2.50	43	B	−89	405	94	50	b	
	16		2.20	41	B	−88	449	86	53		
	16		2.00	42	B	−87	477	82	56		
	15	Ty	2.50	36		35	406	125	31	d	
	16		2.20	34		37	446	120	34		
	16		2.00	33		36	475	112	34		48
10–13	12	M	2.51	14	A	−27	489	84	46	b	
	12		1.99	13	A	−30	556	70	42		
	13		1.50	12	A	−31	625	56	44		
			Long method						40		
	16	T	2.51	51	C	−68	405	70	45	c	
	17		1.99	47	C	−69	477	62	45		
	18		1.50	57	C	−65	531	52	42		
			Long method						17		
	15	Ty	2.50	29		14	444	87	43	b	
	16		2.00	31		16	503	77	38		
	17		1.50	31		16	578	65	45		43
			Long method						46		
10–14	12	M	2.51	30	A	33	431	131	44	c	
	12		2.00	30	A	29	499	109	52		
	13		1.50	28	A	24	580	85	48		
	15	T	2.50	42	B	26	416	99	48	c	
	16		1.99	48	C	30	478	87	50		
	17		1.50	53	C	39	542	82	53		49
10–15	15	Ty	2.50	72		54	365	124	42	c	
	16		2.00	74		55	437	106	46		
	16		1.80	72		55	469	102	45		44
10–16	16	T	2.50	37	B	−106	418	83	46	b	
	16		2.20	36	B	−110	455	77	44		
	17		2.00	39	B	−101	476	76	45		
	15	Ty	2.51	65		62	364	136	48	c	
	16		2.20	62		55	408	126	40		
	16		2.00	62		57	434	121	37		44
10–17	16	T	2.51	46	B	−133	412	75	51	c	
	16		2.20	45	B	−133	456	70	60		
	17		1.99	42	B	−132	485	66	56		
	15	Ty	2.50	35		32	406	118	27	d	
	16		2.00	37		33	475	102	31		
	17		1.50	43		41	533	95	28		47
10–18	15	Ty	2.50	85		55	369	113	58	d	
	16		2.00	89		55	436	94	49		
	16		1.80	91		55	463	90	39		49
10–19	12	M	2.51	82	C	210	328	245	56	d	
	12		2.00	79	C	185	407	191	43		
	13		1.50	76	C	150	504	135	51		
	16	T	2.49	40	B	−111	421	82	56	b	
	16		2.20	39	B	−121	461	74	51		
	17		2.00	40	B	−117	487	71	53		52
10–20	12	M	2.51	36	A	18	426	114	42	c	
	12		2.00	34	A	13	499	95	45		
	13		1.50	31	A	8	580	74	48		
	16	T	2.51	40	B	−100	418	87	53	c	
	16		2.20	42	B	−106	458	79	57		
	17		1.99	45	B	−109	481	75	63		
	15	Ty	2.50	44		23	424	91	57	c	
	16		2.01	41		21	490	77	51		
	17		1.50	33		18	575	66	50		52
10–21	12	M	2.50	24	A	16	444	118	40	c	
	12		1.99	23	A	10	518	97	45		
	13		1.50	22	A	12	595	79	50		
	15	Ty	2.50	26		19	446	101	49	b	
	16		2.00	30		24	500	93	41		
	17		1.50	29		22	577	76	43		44
			Long method						40		

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued											
10–22	12	M	2.50	18	A	−2	468	104	44	c	
	12		2.01	16	A	−7	540	86	50		
	13		1.50	14	A	−12	615	67	46		
	16	T	2.51	31	B	−11	415	121	57	b	
	16		2.20	35	B	−18	448	111	54		
	17		2.00	31	B	−22	481	102	54		
	15	Ty	2.50	48		23	422	96	55	b	
	16		2.20	45		21	465	79	50		
	16		2.00	43		20	492	74	50		52
10–23	12	M	2.51	16	A	−9	476	98	48	b	
	12		2.00	15	A	−14	540	82	47		
	13		1.50	13	A	−17	616	64	48		
	16	T	2.51	61	C	−50	397	84	54	b	
	16		2.20	63	C	−50	433	80	53		
	17		2.00	66	C	−52	459	75	50		
	15	Ty	2.50	22		15	454	100	50	b	
	16		2.01	24		19	512	89	51		
	18		1.51	27		18	583	71	52		50
10–24	12	M	2.52	25	A	−35	440	136	45	b	
	12		2.00	25	A	−34	507	115	38		
	13		1.50	23	A	−28	589	89	46		
			Long method						29		
	16	T	2.50	45	B	−129	415	76	49	b	
	17		2.00	44	B	−127	477	69	48		
	18		1.50	46	B	−139	547	58	52		
			Long method						46		
	16	Ty	2.50	34		16	438	87	51	c	
	16		2.00	33		16	504	75	50		
	18		1.50	34		19	571	67	44		47
10–25	12	M	2.50	36	A	115	396	206	35	p	
	12		2.00	39	A	118	462	174	27		
	13		1.50	38	A	124	544	140	35		
	16	Ty	2.49	35		20	431	94	45	a	
	16		2.20	35		20	468	85	44		
	16		2.00	34		20	496	82	45		45
10–26	12	M	2.50	31	A	41	428	137	44	d	
	12		2.00	36	A	62	484	132	39		
	13		1.50	37	A	81	558	115	40		41
10–27	12	M	2.50	37	A	97	398	187	30	d	
	12		2.00	37	A	75	479	141	36		
	13		1.50	35	A	47	565	96	43		36
10–28	12	M	2.50	19	A	33	452	137	45	c	
	12		2.00	18	A	27	525	112	50		
	13		1.50	17	A	29	598	91	47		
	16	T	2.50	35	B	−147	425	66	35	c	
	17		2.20	38	B	−155	464	61	40		
	17		2.00	39	B	−146	485	61	43		43
10–29	12	M	2.51	31	A	48	422	144	38	c	
	12		2.00	30	A	40	497	118	41		
	13		1.50	24	A	24	581	86	43		41
10–30	12	M	2.50	34	A	4	434	101	46	b	
	12		2.00	32	A	−3	504	84	43		
	13		1.50	30	A	−1	584	69	48		
	16	T	2.49	11	A	−30	469	81	41	b	
	17		2.21	14	A	−30	501	74	42		
	17		2.01	13	A	−32	526	69	39		44
10–31	12	M	2.51	26	A	38	438	136	45	b	
	12		2.00	25	A	28	513	110	49		
	13		1.50	22	A	28	590	90	47		
	16	T	2.50	20	A	−33	453	69	47	b	
	17		2.20	19	A	−32	493	67	48		
	17		2.00	19	A	−31	516	64	48		
	16	Ty	2.50	23		12	458	91	53	b	
	16		2.00	22		12	524	79	51		
	17		1.80	21		12	551	75	53		48
11– 1	16	T	2.50	29	B	−108	429	79	42	c	
	17		2.20	29	B	−114	470	73	46		
	17		2.00	29	B	−111	495	70	45		44
11– 2	12	M	2.51	41	A	38	413	129	40	c	
	12		2.00	42	A	30	484	105	42		
	13		1.50	34	A	18	572	79	46		
	16	T	2.50	21	A	−37	454	64	43	b	
	17		2.21	20	A	−39	490	60	44		
	17		2.00	20	A	−38	515	57	40		42
11– 3	12	M	2.50	10	A	−19	503	92	51	b	
	12		2.00	9	A	−22	568	78	53		
	13		1.50	7	A	−18	633	66	48		
1943—Continued											
11– 3	16	T	2.50	23	A	−32	452	68	54	c	
	17		2.19	23	A	−33	489	64	47		
	17		2.00	23	A	−33	510	60	41		49
			Long method						25		
11– 4	12	M	2.51	20	A	0	462	105	50	a	
	12		2.00	20	A	−1	528	90	50		
	13		1.50	19	A	−2	602	72	50		
	16	T	2.49	23	A	−41	449	59	40	b	
	17		2.20	24	A	−42	481	53	37		
	17		2.01	24	A	−41	505	52	36		
	16	Ty	2.49	20		15	450	100	34	d	
	16		2.00	25		23	492	95	30		
	17		1.80	27		23	526	87	39		44
11– 5	12	M	2.50	20	A	2	467	106	56	b	
	12		1.99	21	A	4	527	93	52		
	13		1.50	22	A	6	595	76	60		
	16	Ty	2.50	38		17	429	85	61	d	
	16		2.20	32		14	475	79	56		
	16		2.00	31		16	502	77	38		55
			Long method						40		
11– 6	16	T	2.51	35	8	−111	425	81	46	b	
	17		2.21	35	B	−119	463	73	45		
	17		2.01	35	B	−116	490	70	45		
	16	Ty	2.50	27		20	440	103	51	c	
	17		2.00	26		21	504	91	43		
	17		1.80	25		22	532	87	43		45
11– 7	16	Ty	2.50	9		4	490	90	40	d	
	16		2.21	9		4	531	82	44		42
11–10	15	M	1.09	53	B	80	607	83	40	d	
	16		1.04	49	B	70	625	75	41		
	16		1.01	58	B	98	619	86	48		
	16	T	2.50	35	B	−144	419	67	42	d	
	17		2.21	30	B	−130	461	69	34		
	17		2.00	31	B	−126	491	66	40		41
11–11	17	T	2.51	24	A	−33	439	67	40	d	
	17		2.20	24	A	−33	478	64	39		
	17		2.00	21	A	−35	502	60	34		
	16	Ty	2.50	28		16	446	93	52	c	
	17		2.01	29		17	504	82	49		
	17		1.81	30		18	534	77	53		47
11–12	16	Ty	2.50	32		18	436	94	50	b	
	16		2.20	31		18	471	87	44		
	17		2.00	32		19	500	83	47		47
11–13	16	Ty	2.20	34		27	468	100	51	b	
	17		2.00	33		26	489	95	44		
	17		1.80	32		25	522	87	48		48
11–17	12	M	2.00	33	A	36	488	113	37	c	
	12		1.67	32	A	31	542	96	38		
	13		1.50	31	A	30	572	87	42		39
11–18	17	T	2.50	83	D	1	383	68	49	b	
	17		2.20	82	D	1	420	65	49		
	17		2.01	79	D	−1	450	61	49		
	18	Ty	1.64	52		36	519	83	49	d	
	19		1.62	53		37	516	84	42		
	19		1.61	60		44	513	87	50		48
11–19	17	T	2.50	94	D	2	375	64	45	c	
	17		2.20	92	D	1	416	61	40		
	17		2.00	79	D	−2	454	59	50		
	16	Ty	2.50	31		23	428	104	44	b	
	16		2.21	30		23	463	97	38		
	17		2.00	32		24	494	92	44		41
11–20	17	T	2.48	79	D	−6	392	62	50	b	
	17		2.20	78	D	−4	426	61	48		
	17		2.00	73	D	−3	456	61	48		
			Long method						25		
	16	Ty	2.50	64		34	383	92	30	c	
	17		2.20	64		38	423	90	39		
	17		2.00	58		37	454	89	38		45
			Long method						70		
11–21	11	M	2.51	57	B	138	357	233	34	d	
	12		2.00	50	B	121	446	182	34		
	13		1.50	46	B	115	552	140	43		
	17	Ty	2.20	56		41	432	104	50	c	
	17		2.01	57		42	456	100	45		
	18		1.80	60		50	480	104	46		44
11–22	11	M	2.51	39	A	38	416	131	43	c	
	12		1.99	41	A	35	489	108	43		
	13		1.50	35	A	26	571	83	49		
1943—Continued											
11–22	17	T	2.50	38	8	−94	402	89	27	d	
	17		2.20	42	B	−90	436	85	33		
	18		2.01	46	B	−91	460	82	34		
	17	Ty	2.20	79		61	398	119	47	c	
	17		2.00	84		66	422	117	49		
	18		1.80	84		66	455	109	50		45
11–23	17	T	2.50	29	B	−117	425	76	34	b	
	17		2.20	32	8	−114	459	74	35		
	18		2.00	30	B	−124	490	66	37		35
11–25	17	T	2.50	40	B	−134	410	73	32	d	
	17		2.20	38	B	−133	455	69	33		32
11–26	17	T	2.50	23	A	−34	442	66	36	c	
	17		2.20	19	A	−40	489	59	37		
	18		2.00	17	A	−37	517	60	37		37
11–28	17	T	2.49	19	A	−42	453	60	33	c	
	18		2.20	18	A	−42	497	58	44		
	18		2.00	19	A	−40	522	55	43		
	16	Ty	2.50	10		0	495	80	47	b	
	17		2.20	9		0	537	74	50		
	17		2.00	11		1	551	70	44		44
11–29	18	T	2.20	10	A	−48	516	58	40	b	
	18		2.14	10	A	−48	524	57	40		
	18		2.00	10	A	−41	538	61	42		
	16	Ty	2.50	25		23	428	113	29	d	
	17		2.20	24		22	469	102	29		
	17		2.00	23		21	507	94	37		39
11–30	17	T	2.50	58	C	−66	397	72	42	c	
	18		2.20	65	C	−62	427	72	39		
	18		2.00	68	C	−61	450	70	38		
	16	Ty	2.49	44		33	410	111	45	c	
	17		2.20	45		35	445	105	44		
	17		2.00	43		35	471	100	42		42
12– 1	13	M	1.33	13	A	−13	642	61	44	d	
	14		1.21	15	A	−11	658	57	42		
	15		1.10	17	A	−3	669	55	48		45
12– 2	17	Ty	2.00	17		12	530	83	50	c	
	18		1.80	16		14	551	82	45		
	18		1.76	16		14	557	81	45		47
12– 4	17	T	2.50	65	C	−79	395	65	41	b	
	18		2.20	66	C	−81	433	61	41		
	18		2.00	66	C	−79	458	58	41		41
12– 8	17	T	2.50	59	C	−58	394	71	38	d	
	18		2.20	56	C	−51	435	78	52		
	18		2.12	55	C	−54	448	74	49		46
12–11	13	M	1.32	13	A	−39	651	48	44	d	
	14		1.16	10	A	−48	679	43	40		
	15		1.08	12	A	−46	691	42	38		41
12–15	14	M	1.31	46	B	83	578	104	43	d	
	14		1.19	45	B	87	603	97	47		
	15		1.10	47	B	89	617	91	47		
	17	T	2.51	21	A	−39	456	62	42	b	
	18		2.20	22	A	−36	493	62	43		
	18		1.97	22	A	−35	517	59	40		
	17	Ty	2.50	34		14	439	82	49	b	
	17		2.20	35		16	476	78	50		
	18		2.00	34		16	502	74	47		46
			Long method						50		
12–16	12	M	2.01	41	A	89	470	151	37	d	
	12		1.81	36	A	84	501	138	40		
	13		1.47	40	A	76	562	109	40		
	17	Ty	2.50	21		6	465	81	46	b	
	17		2.20	21		7	502	77	46		
	18		2.00	22		8	531	72	51		45
12–20	12	M	2.52	117	C	234	285	271	36	d	
	12		2.00	115	C	223	370	221	37		
	13		1.50	117	C	198	467	164	46		
	17	Ty	2.50	40		24	426	96	55	c	
	17		2.20	40		25	463	91	53		
	18		2.00	41		28	483	90	48		47
12–21	12	M	2.52	71	B	85	367	166	51	c	
	12		2.01	66	B	80	445	137	51		
	13		1.50	62	B	76	529	107	47		50
12–22	12	M	2.49	45	A	28	414	119	39	c	
	12		2.00	43	A	26	485	101	43		
	13		1.50	36	A	18	569	78	44		42
12–23	12	M	2.52	61	B	42	398	123	56	c	
	12		2.00	58	B	38	474	103	57		
	13		1.50	57	B	33	550	79	52		55

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1943—Continued											
12–24	12	M	2.51	83	C	105	354	173	59	d	
	12		2.00	79	C	90	438	138	62		
	13		1.50	76	C	78	521	104	52		58
12–25	12	M	2.50	97	C	284	298	299	55	d	
	12		1.99	95	C	257	388	234	55		
	13		1.50	90	C	232	485	174	57		
	17	T	2.50	16	A	—12	450	98	45	c	
	18		2.21	18	A	11	473	115	46		
	19		2.00	21	A	5	497	100	47		50
12–26	12	M	2.51	96	C	278	298	295	49	d	
	12		2.00	91	C	257	385	234	49		
	13		1.50	94	C	256	475	184	52		50
12–27	12	M	2.50	92	C	267	310	285	63	d	
	12		2.00	92	C	256	386	234	55		
	13		1.50	89	C	249	484	180	55		58
12–28	12	M	2.51	101	C	265	302	287	61	d	
	12		2.00	96	C	245	387	229	52		
	13		1.50	91	C	222	480	170	45		53
12–29	12	M	2.50	77	B	113	353	195	53	c	
	12		1.99	74	B	107	433	158	49		
	13		1.50	66	B	95	520	118	50		51
			Long method						58		
12–30	12	M	2.51	93	C	145	333	205	52	d	
	12		2.00	96	C	137	407	169	45		
	13		1.50	96	C	136	495	132	50		
	17	Ty	2.50	16		14	465	102	49	b	
	17		2.20	15		14	508	96	48		
	18		2.01	14		14	530	91	47		48
1944											
1– 1	13	M	1.43	111	C	170	487	145	42	d	
	14		1.27	113	C	181	512	135	41		
	14		1.16	117	C	196	529	131	42		
	17	T	2.51	83	D	15	375	88	53	c	
	18		2.21	84	D	18	412	85	51		
	19		1.99	84	D	19	441	82	55		
	17	Ty	2.49	29		43	415	150	43	c	
	17		2.19	29		41	461	132	47		
	18		2.00	30		42	489	125	52		48
1– 2	17	Ty	2.50	24		14	453	93	45	b	
	17		2.20	26		14	491	84	49		
	18		2.00	26		14	516	78	50		48
1– 3	13	M	1.50	158	C	170	446	156	45	d	
	14		1.33	154	C	154	483	135	43		
	14		1.20	153	C	155	513	123	47		
	18	Ty	1.95	16		8	544	76	48	c	
	18		1.90	17		9	547	77	47		
	19		1.80	19		10	560	73	50		47
1– 4	13	M	1.39	147	C	219	454	166	30	p	
	14		1.25	148	C	211	487	154	36		
	14		1.14	149	C	212	508	138	35		
	18	T	2.51	22	A	—22	447	81	53	d	
	18		2.20	21	A	—13	487	86	54		
	19		2.00	27	A	—17	507	74	59		
			Long method						51		
	19	Ty	2.20	28		21	476	96	37	p	
	20		2.32	28		22	468	102	54		
	20		2.50	28		21	439	104	40		55
1– 5	17	Ty	2.50	22		7	462	82	45	d	
	17		2.20	24		10	493	79	45		
	18		2.00	23		9	523	73	50		47
1– 6	18	T	2.50	25	A	—23	442	77	63	c	
	18		2.20	26	A	—25	478	70	58		
	19		2.00	26	A	—25	503	68	55		59
1– 7	18	T	2.50	17	A	—41	467	63	49	b	
	18		2.20	15	A	—47	507	55	45		
	19		2.00	13	A	—43	534	57	44		46
1– 9	17	T	2.50	33	B	—57	422	102	59	c	
	18		2.19	30	B	—57	468	95	57		
	18		2.07	31	B	—61	480	90	53		
	17	Ty	2.50	10		0	494	80	48	b	
	17		2.20	11		1	531	74	49		
	18		2.00	10		1	553	70	41		49
1–12	17	T	2.50	15	A	—28	468	79	51	b	
	18		2.13	14	A	—32	512	71	50		
	18		2.00	16	A	—26	527	73	49		50
			Long method						57		
1–14	17	T	2.50	17	A	—32	461	72	50	c	
	18		2.20	18	A	—31	496	70	52		
	18		2.00	19	A	—29	519	67	49		
1944—Continued											
1–14	17	Ty	2.50	14		2	484	81	46	b	
	17		2.20	15		3	517	76	46		
	18		2.00	16		4	541	71	44		47
1–15	17	T	2.50	25	A	—24	439	77	49	c	
	18		2.20	25	A	—23	479	74	52		
	19		1.92	25	A	—14	510	77	50		50
1–16	18	T	2.18	19	A	—24	490	76	48	b	
	19		1.90	18	A	—25	533	66	50		
	19		1.86	17	A	—30	539	66	49		
	17	Ty	2.49	13		3	479	83	37	c	
	17		2.20	14		2	520	75	44		
	18		2.00	13		2	546	70	42		47
1–19	17	T	2.50	13	A	—29	465	80	41	b	
	18		2.19	12	A	—32	505	74	42		
	18		2.00	12	A	—25	529	77	43		
	17	Ty	2.50	12		2	481	82	37	b	
	17		2.20	12		2	517	76	38		
	17		2.00	12		3	544	72	40		40
1–20	17	Ty	2.50	11		1	487	81	41	c	
	17		2.20	10		1	524	76	40		
	17		2.03	11		2	548	72	44		42
1–21	17	T	2.49	74	C	—70	391	74	46	c	
	18		2.20	73	C	—72	428	67	49		
	18		2.00	73	C	—66	455	67	47		
			Long method						37		
	17	Ty	2.50	43		25	424	96	52	c	
	17		2.20	45		27	451	89	44		
	17		2.00	42		26	482	84	46		47
1–27	12	M	2.50	85	C	15	377	114	43	c	
	13		1.99	80	C	8	453	93	44		
	13		1.50	74	C	4	535	72	44		44
2– 1	13	M	1.99	117	C	59	412	130	46	d	
	13		1.50	113	C	45	500	97	44		
	14		1.32	115	C	52	530	88	47		
	18	T	2.15	43	B	—24	451	109	60	d	
	18		2.00	45	B	—28	468	104	64		
	18		1.80	49	B	—46	493	94	61		52
2– 2	18	T	2.00	37	B	—53	479	93	55	c	
	18		1.90	35	B	—57	494	89	50		
	18		1.80	34	B	—56	510	86	54		53
2– 6	17	T	2.49	49	C	—47	409	84	49	b	
	17		2.20	47	C	—45	449	80	55		
	18		2.00	47	C	—49	475	74	50		51
2– 9	17	T	2.50	15	A	—21	461	88	55	b	
	17		2.19	13	A	—25	508	80	53		
	18		1.97	14	A	—27	532	72	50		53
2–10	17	T	2.50	14	A	—14	466	97	59	b	
	17		2.20	13	A	—16	505	90	59		
	18		2.00	11	A	—19	533	83	52		57
2–11	17	T	2.51	17	A	—20	458	87	57	b	
	17		2.20	17	A	—21	493	81	51		
	18		1.99	17	A	—19	520	78	52		53
2–12	17	T	2.48	16	A	—3	448	109	51	c	
	17		2.20	17	A	6	475	110	49		
	18		2.00	17	A	—6	520	92	50		50
2–13	17	T	2.50	20	A	—24	457	82	64	c	
	17		2.20	21	A	—22	488	77	57		
	18		1.99	22	A	—21	515	74	59		60
2–16	17	T	2.44	19	A	—5	451	102	50	b	
	17		2.20	22	A	—9	479	91	54		
	18		2.00	23	A	—11	505	83	57		54
2–18	13	M	1.50	123	C	26	488	90	33	p	
	14		1.33	115	C	23	524	78	38		
	14		1.22	120	C	26	539	74	34		
	17	T	2.51	16	A	—7	445	105	50	a	
	17		2.20	15	A	—7	486	97	51		
	17		2.00	15	A	—7	514	92	51		51
2–19	13	M	1.80	104	C	45	444	110	29	p	
	13		1.50	99	C	34	502	90	33		
	14		1.33	92	C	33	537	79	36		
2–20	13	M	2.00	64	B	39	458	101	40	d	
	13		1.80	57	B	32	489	91	33		
	14		1.50	56	B	30	537	77	35		36
2–27	16	T	2.47	25	A	8	430	114	54	c	
	17		2.19	22	A	4	472	104	52		
	17		2.00	21	A	4	501	99	54		53
1944—Continued											
2–28	16	T	2.49	35	B	—43	413	109	56	c	
	17		2.20	29	B	—35	462	102	58		
	17		2.00	30	B	—40	489	96	60		58
		Ty	Long method						49		
2–29	16	Ty	2.50	25		12	450	87	49	b	
	16		2.20	25		12	484	81	45		
	16		1.99	25		12	518	76	53		49
3– 2	13	M	1.80	47	B	54	491	113	25	d	
	14		1.50	47	B	55	537	98	31		
	14		1.41	46	B	52	555	91	30		29
3– 3	17	T	1.77	47	C	12	489	104	59	c	
	17		1.70	48	C	12	500	102	56		
	18		1.64	48	C	12	509	101	56		57
3– 5	12	M	2.50	37	A	17	422	112	38	c	
	13		1.99	36	A	11	492	93	39		
	14		1.50	29	A	2	575	70	42		40
3– 6	12	M	2.51	34	A	17	426	114	36	c	
	13		2.00	32	A	10	496	94	31		
	14		1.50	28	A	3	576	72	35		34
			Long method						37		
3– 7	12	M	2.50	19	A	—19	466	88	40	b	
	13		1.99	18	A	—24	537	73	45		
	14		1.50	15	A	—28	614	57	45		43
3– 8	12	M	2.50	22	A	—9	458	96	45	b	
	13		2.00	21	A	—13	523	80	41		
	14		1.50	23	A	—7	590	67	40		
	16	T	2.50	41	B	—18	392	121	43	b	
	17		2.00	39	B	—20	464	105	46		
	18		1.50	37	B	—27	547	88	49		44
			Long method						30		
3– 9	12	M	2.51	24	A	—2	448	102	35	d	
	13		1.98	21	A	—8	523	84	41		
	14		1.50	20	A	—7	591	67	38		
	16	Ty	2.50	19		24	438	121	35	d	
	16		2.00	20		24	505	103	42		
	17		1.50	24		28	570	90	46		40
3–11	13	M	2.00	81	C	40	437	111	39	d	
	14		1.50	75	C	28	525	82	39		
	14		1.41	70	C	29	543	77	38		
	20	Ty	1.23	69		44	567	69	44	d	
	20		1.24	68		43	566	69	46		
	20		1.26	68		46	561	73	43		42
3–12	15	Ty	2.50	52		38	398	113	50	c	
	16		2.00	54		41	460	100	48		
	16		1.80	53		37	495	89	50		49
3–14	16	T	2.18	18	A	34	461	139	51	c	
	17		1.98	18	A	36	492	134	56		
	17		1.80	18	A	34	517	126	56		54
3–17	12	M	2.50	25	A	—2	447	100	40	c	
	13		2.00	23	A	—8	517	83	39		
	14		1.50	21	A	—11	596	65	45		41
3–18	16	T	2.48	41	B	66	385	154	61	d	
	16		2.20	40	B	71	426	145	59		
	16		2.00	39	B	84	455	142	62		61
3–19	12	M	2.50	66	B	68	375	147	36	d	
	13		2.00	58	B	54	451	117	32		
	14		1.50	61	B	52	529	91	36		35
			Long method						39		
3–20	12	M	2.50	73	B	49	377	123	38	d	
	13		2.00	69	B	37	451	97	36		
	14		1.50	63	B	28	535	73	33		36
3–21	12	M	2.51	67	B	70	367	149	35	d	
	13		2.00	65	B	65	441	124	31		
	14		1.50	62	B	59	525	96	34		
	17	T	1.57	14	A	162	527	219	55	d	
	17		1.53	14	A	157	538	211	60		
	17		1.48	13	A	156	547	206	65		
	15	Ty	2.50	22		46	405	166	26	d	
	16		1.99	23		57	473	159	41		
	17		1.50	18		52	554	128	41		43
			Long method						40		
3–22	12	M	2.50	103	C	137	320	202	39	d	
	13		2.00	98	C	127	399	163	37		
	14		1.50	94	C	114	488	123	44		
	18	T	1.37	25	B	—51	587	76	53	d	
	18		1.35	27	B	—46	592	76	57		
	18		1.32	25	B	—62	596	72	51		46

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1944—Continued											
3–23	12	M	2.51	98	C	125	327	192	39	d	
	13		1.99	94	C	125	402	161	31		
	14		1.50	97	C	130	482	130	35		35
3–24	12	M	2.50	69	B	74	363	153	34	d	
	13		2.00	68	B	69	435	126	33		
	14		1.50	66	B	69	516	101	34		
	17	Ty	1.47	54		34	549	71	48	d	
	17		1.42	54		33	557	70	48		
	17		1.38	51		27	570	63	46		40
3–27	16	T	2.20	18	A	73	447	183	55	c	
	16		2.00	17	A	75	474	176	50		
	16		1.80	19	A	79	502	166	57		54
3–28	15	M	1.29	106	C	23	536	82	35	d	
	15		1.20	97	C	39	557	75	38		
	16		1.15	91	C	30	573	68	39		
	16	T	2.50	10	A	25	451	147	54	c	
	16		2.21	9	A	22	493	134	55		
	16		2.00	9	A	25	517	130	50		
	15	Ty	2.51	20		94	380	271	52	d	
	16		2.00	22		97	446	235	52		
	17		1.50	22		87	535	176	57		49
			Long method						79		
3–29	12	M	2.50	46	A	17	410	112	34	c	
	13		2.00	44	A	15	478	93	35		
	14		1.50	40	A	10	561	72	43		
	16	T	2.49	23	A	43	411	158	54	c	
	16		2.20	22	A	43	455	145	59		
	16		2.00	21	A	35	484	131	54		
	19	Ty	1.15	21		68	611	127	57	d	
	20		1.16	23		73	606	131	56		
	20		1.17	21		67	605	126	52		48
3–30	12	M	2.51	55	B	32	397	115	37	d	
	13		2.00	54	B	30	470	97	44		
	14		1.50	54	B	29	541	77	38		40
3–31	12	M	2.48	69	B	62	379	136	44	d	
	13		1.99	68	B	55	448	113	38		
	14		1.50	63	B	50	527	89	36		
	16	T	1.80	48	C	125	450	168	52	d	
	17		1.68	48	C	129	470	162	55		
	17		1.50	48	C	119	502	147	50		45
4– 1	12	M	2.51	101	C	42	348	138	35	d	
	13		2.00	95	C	32	429	110	36		
	14		1.50	92	C	25	510	85	34		
	16	T	1.99	40	B	278	404	212	37	d	
	16		1.80	38	B	287	437	198	40		
	17		1.50	40	B	298	485	175	38		
	15	Ty	2.49	29		83	361	237	34	d	
	15		2.00	29		91	430	216	40		
	15		1.50	30		89	515	172	45		38
4– 2	12	M	2.50	59	B	36	392	117	32	d	
	13		2.00	55	B	28	467	95	39		
	14		1.50	55	B	28	541	75	37		35
4– 3	12	M	2.51	93	C	23	360	121	35	c	
	13		2.01	92	C	13	435	99	36		
	14		1.50	87	C	10	516	77	32		34
4– 4	12	M	2.50	91	C	26	365	123	32	p	
	13		2.00	83	C	20	438	100	30		
	14		1.50	76	C	15	522	77	29		
	16	T	1.66	30	B	61	521	121	55	d	
	17		1.59	30	B	61	531	119	56		
	17		1.53	30	B	64	540	117	57		56
4– 5	16	T	2.21	10	A	91	462	213	55	d	
	16		2.00	10	A	93	488	199	54		
	16		1.80	12	A	93	521	184	60		56
4– 9	13	M	2.21	34	A	—23	482	71	48	c	
	13		2.01	32	A	—26	511	66	47		
	14		1.50	30	A	—28	587	52	47		47
4–10	13	M	2.51	30	A	—29	453	74	46	c	
	13		2.00	27	A	—34	526	62	46		
	14		1.50	25	A	—35	596	50	39		
			Long method						35		
	16	T	1.80	36	B	75	475	132	45	c	
	17		1.51	40	B	90	512	125	43		
	17		1.46	41	B	91	523	123	40		44
4–11	13	M	2.50	30	A	—19	448	83	41	c	
	13		2.00	29	A	—22	512	71	40		
	14		1.50	28	A	—21	588	57	47		43
		Ty	Long method						35		
1944—Continued											
4–12	13	M	2.50	55	B	40	399	123	43	c	
	13		2.00	52	B	34	467	102	38		
	14		1.50	53	B	34	546	81	44		
	15	Ty	2.50	57		54	371	140	40	d	
	16		2.00	59		56	440	122	47		
	16		1.50	53		44	526	90	42		42
4–13	13	M	2.50	61	B	39	391	119	38	c	
	13		2.00	66	B	44	453	104	38		
	14		1.50	67	B	41	529	81	37		38
4–14	13	M	2.50	48	B	27	411	112	43	b	
	13		2.00	45	B	21	480	93	39		
	14		1.50	46	B	25	555	77	41		41
4–15	13	M	2.51	39	A	18	424	113	40	c	
	13		2.00	38	A	9	492	90	45		
	14		1.50	39	A	1	570	67	50		
	15	Ty	2.50	36		53	396	164	50	c	
	15		2.00	35		54	462	142	50		
	16		1.50	37		51	539	112	47		47
4–16	13	M	2.50	19	A	—30	476	78	51	c	
	13		2.00	15	A	—32	543	68	45		
	14		1.50	21	A	—25	601	57	45		47
4–17	16	T	1.67	39	B	56	504	121	54	d	
	16		1.60	42	B	59	515	120	60		
	17		1.49	43	B	40	531	111	47		54
4–18	13	M	2.20	43	A	—8	466	80	46	c	
	13		2.00	41	A	—11	496	73	44		
	14		1.50	38	A	—15	574	57	53		48
4–19	13	M	2.49	34	A	—14	443	85	44	c	
	13		2.00	31	A	—22	512	69	43		
	14		1.50	27	A	—18	587	59	43		
	15	Ty	2.50	25		90	361	257	35	d	
	15		2.00	31		95	424	221	37		
	15		1.86	32		99	443	217	41		41
4–22	16	T	1.98	34	B	14	461	115	37	c	
	16		1.79	33	B	11	492	107	44		
	17		1.50	31	B	0	539	96	39		40
			Long method						40		
4–25	13	M	2.50	36	A	10	429	107	42	c	
	13		2.00	33	A	0	503	86	44		
	14		1.50	30	A	—3	581	68	44		
	15	Ty	2.50	49		106	337	262	61	d	
	15		2.19	47		106	386	240	63		
	15		1.99	46		104	418	223	59		49
4–26	13	M	2.51	40	A	18	422	111	43	c	
	13		2.00	38	A	13	492	93	45		
	14		1.50	36	A	6	568	71	41		43
			Long method						44		
4–27	13	M	2.50	32	A	16	434	115	41	c	
	13		2.01	32	A	9	503	93	47		
	14		1.50	27	A	4	581	73	42		43
4–28	13	M	2.51	20	A	—14	466	92	52	c	
	13		2.00	16	A	—20	540	76	46		
	14		1.50	11	A	—28	629	58	51		50
4–29	13	M	2.20	34	A	—10	479	82	45	c	
	13		2.00	36	A	—10	501	77	43		
	14		1.64	38	A	—8	548	66	41		
	16	T	1.55	77	C	229	436	199	59	d	
	17		1.50	72	C	219	448	190	58		
	17		1.45	72	C	207	461	181	54		48
4–30	13	M	2.50	65	B	12	400	88	30	c	
	13		2.00	65	B	15	466	79	39		
	14		1.50	63	B	15	540	63	34		34
5– 1	13	M	2.49	34	A	—23	447	76	46	b	
	13		2.01	33	A	—27	510	65	46		
	14		1.50	30	A	—27	587	53	46		
	15	T	2.48	66	C	81	331	177	39	c	
	15		2.14	69	C	87	383	165	51		
	16		1.98	66	C	101	397	166	47		46
5– 2	13	M	2.50	33	A	—19	447	81	47	b	
	13		2.00	31	A	—24	515	68	46		
	14		1.50	31	A	—21	587	56	49		
	15	T	2.48	87	D	89	291	187	20	c	
	15		2.23	84	D	88	331	176	24		
	16		2.00	83	D	89	373	166	18		42
5– 4	13	M	2.51	35	A	—24	445	76	47	b	
	13		2.00	33	A	—25	512	66	48		
	14		1.50	31	A	—26	588	53	48		
1944—Continued											
5– 4	15	T	2.50	21	A	83	381	211	39	c	
	15		2.20	19	A	79	429	187	42		
	15		2.00	20	A	81	455	180	39		46
5– 5	15	M	1.50	18	A	—31	608	54	45	c	
	15		1.40	18	A	—33	621	51	41		
	15		1.34	20	A	—35	632	48	42		
	15	T	2.13	28	B	154	429	170	41	c	
	15		2.00	30	B	156	451	166	54		
	16		1.80	29	B	144	482	151	48		45
5– 6	13	M	2.50	27	A	—7	449	98	46	c	
	13		2.00	27	A	—11	512	82	40		
	15		1.50	26	A	1	584	71	44		
	16	T	1.72	55	C	19	479	107	47	c	
	16		1.64	54	C	19	492	105	47		
	17		1.44	60	C	14	520	96	47		45
5– 7	13	M	2.51	28	A	—20	456	82	48	c	
	13		2.00	30	A	—25	520	68	47		
	15		1.50	28	A	—25	591	54	49		
	15	Ty	2.00	77		117	375	216	53	c	
	15		1.80	78		114	409	194	50		
	16		1.50	70		101	474	158	45		48
5– 8	15	T	2.50	57	C	136	317	220	49	c	
	15		2.22	58	C	138	362	205	56		
	15		2.00	58	C	139	399	189	57		
	14	Ty	2.50	72		125	288	276	41	d	
	15		2.00	72		112	380	211	45		
	16		1.50	68		98	476	156	44		51
5– 9	13	M	2.50	36	A	—13	439	85	48	c	
	13		2.00	34	A	—18	507	71	45		
	15		1.50	30	A	—21	588	57	48		
	15	T	2.50	37	B	68	382	155	55	c	
	15		2.20	36	B	58	427	140	53		
	15		2.00	35	B	43	459	127	53		50
5–10	13	M	2.49	16	A	—31	485	78	47	c	
	13		2.00	17	A	—32	540	67	43		
	15		1.50	17	A	—31	608	54	42		
	15	T	2.50	35	B	29	398	138	62	c	
	15		2.20	35	B	24	432	126	50		
	15		2.00	38	B	24	460	121	55		49
5–11	15	T	2.48	30	B	173	379	203	60	d	
	15		2.21	30	B	159	417	178	55		
	15		2.00	29	B	152	456	164	61		
	14	Ty	2.50	44		47	393	140	48	b	
	15		2.00	41		44	462	118	45		
	16		1.50	54		50	525	99	43		48
5–12	15	T	2.50	54	C	6	371	123	43	d	
	15		2.21	50	C	5	424	113	59		
	15		2.00	46	C	3	458	105	57		53
5–14	13	M	2.49	58	B	0	420	78	42	c	
	13		2.00	58	B	—1	484	67	45		
	15		1.50	58	B	7	550	60	40		42
5–15	13	M	2.51	43	A	—6	425	87	42	b	
	13		2.01	37	A	—14	498	73	41		
	15		1.50	35	A	—17	576	57	40		41
			Long method						35		
5–16	16	Ty	1.37	32		51	561	109	42	d	
	16		1.31	35		53	569	107	42		
	17		1.25	37		71	565	125	40		41
5–17	13	M	2.50	17	A	—25	477	84	42	b	
	13		2.00	15	A	—28	546	71	45		
	15		1.47	13	A	—29	625	56	50		46
5–18	13	M	2.49	12	A	—30	493	81	45	b	
	13		2.00	12	A	—32	557	69	45		
	15		1.50	11	A	—31	628	56	46		45
5–19	13	M	2.49	37	A	—9	439	89	48	c	
	14		2.00	39	A	—10	498	75	47		
	14		1.70	44	A	—8	535	68	45		47
5–22	13	M	2.20	63	B	12	445	82	40	d	
	14		2.00	65	B	14	470	78	40		
	15		1.49	51	B	8	557	62	41		40
5–23	13	M	2.49	20	A	—36	474	71	41	c	
	14		1.99	17	A	—39	544	62	41		
	15		1.50	13	A	—38	626	52	46		43
		Ty	Long method						58		
5–24	13	M	2.50	23	A	—22	465	82	44	b	
	14		2.00	21	A	—22	527	73	42		
	15		1.50	26	A	—25	592	55	46		44

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1944—Continued											
5–25	13	M	2.48	12	A	−39	499	73	42	c	
	14		2.00	12	A	−28	554	72	42		
	15		1.50	17	A	−13	605	66	45		43
5–28	13	M	2.48	35	A	−17	449	82	52	c	
	14		2.00	33	A	−23	512	68	49		
	15		1.50	31	A	−20	585	57	47		49
5–29	13	M	2.50	27	A	−29	459	75	46	b	
	14		2.00	26	A	−31	520	64	40		
	15		1.50	23	A	−33	594	51	40		42
			Long method						39		
5–30	13	M	2.49	19	A	−34	479	74	45	b	
	14		2.00	17	A	−36	544	64	41		
	15		1.50	16	A	−36	613	51	41		
	14	Ty	2.50	77		97	323	213	57	d	
	15		2.00	73		93	405	176	61		
	16		1.50	78		98	481	149	63		48
			Long method						57		
5–31	13	M	2.50	17	A	−34	478	75	43	b	
	14		2.00	16	A	−37	543	63	41		
	15		1.50	16	A	−37	614	50	42		
	14	Ty	2.51	47		86	351	224	51	c	
	15		2.00	48		84	428	185	53		
	16		1.50	49		80	516	144	57		46
6– 1	13	M	2.50	21	A	−30	473	76	49	d	
	14		2.00	20	A	−32	536	66	46		47
6– 2	13	M	2.50	26	A	−22	460	81	49	c	
	14		2.00	27	A	−22	522	71	48		
	15		1.50	30	A	−19	587	58	48		48
6– 3	13	M	2.48	17	A	−32	480	76	40	c	
	14		2.00	15	A	−37	546	64	44		
	15		1.50	14	A	−29	613	57	41		42
6– 4	13	M	2.49	9	A	−38	508	75	43	b	
	14		2.00	8	A	−40	570	64	43		
	15		1.50	7	A	−41	639	51	40		
	15	T	2.50	44	8	22	388	138	57	c	
	15		2.20	41	B	21	426	126	54		
	15		2.00	40	B	9	456	116	53		46
6– 5	13	M	2.50	8	A	−36	515	76	41	c	
	14		2.00	8	A	−39	573	65	46		
	14	Ty	2.50	60		107	324	253	57	d	
	15		2.00	66		105	400	205	60		
	15		1.80	66		104	437	189	65		50
6– 6	13	M	2.50	10	A	−29	496	83	37	b	
	14		2.00	10	A	−33	563	69	41		
	15		1.50	10	A	−34	631	54	45		41
			Long method						47		
6– 7	13	M	2.50	19	A	−32	476	76	45	b	
	14		2.00	18	A	−34	541	65	44		
	15		1.50	18	A	−33	610	53	46		45
6– 8	13	M	2.50	17	A	−18	477	89	48	c	
	14		2.00	17	A	−21	540	76	48		
	15		1.50	17	A	−19	611	62	50		
	16	T	1.70	45	8	56	491	124	54	d	
	16		1.60	46	B	84	502	129	54		
	16		1.50	44	8	97	519	126	60		51
6– 9	13	M	2.49	16	A	−17	477	91	42	b	
	14		2.00	16	A	−18	539	78	45		
	15		1.50	15	A	−21	613	61	45		
	15	T	2.50	18	A	34	413	150	29	d	
	15		2.00	18	A	38	480	137	37		
	16		1.46	20	A	43	545	120	38		
			Long method						18		
	14	Ty	2.50	30		89	382	249	69	d	
	15		2.00	31		94	457	201	65		
	16		1.50	35		91	526	171	59		46
			Long method						35		
6–10	13	M	2.50	13	A	−26	487	84	43	b	
	14		2.00	13	A	−31	549	69	40		
	15		1.50	11	A	−32	626	55	45		
	14	Ty	2.49	42		73	366	201	38	d	
	15		2.00	40		71	441	168	44		
	16		1.50	49		79	512	143	50		43
6–11	13	M	2.50	12	A	−28	495	83	45	b	
	14		2.00	11	A	−31	557	70	43		
	15		1.50	10	A	−32	631	56	48		
	14	Ty	2.50	35		71	387	205	58	d	
	15		2.00	41		71	456	168	64		
	16		1.50	34		61	537	129	46		47
1944—Continued											
6–12	13	M	2.24	9	A	−31	538	76	46	p	
	14		1.70	9	A	−31	608	63	47		
	15	T	1.85	58	C	108	429	162	43	d	
	16		1.70	76	C	117	432	160	41		
	16		1.50	73	C	101	476	141	53		46
6–13	13	M	2.50	11	A	8	479	116	35	c	
	14		2.00	11	A	7	543	99	40		
	15		1.50	11	A	1	616	75	42		39
6–14	13	M	2.50	14	A	24	458	131	27	c	
	14		2.00	13	A	17	529	106	33		
	15		1.50	14	A	17	597	85	28		
	15	Ty	2.00	33		41	474	121	43	b	
	15		1.80	35		42	499	112	42		
	16		1.50	33		38	550	98	42		38
6–15	13	M	2.49	38	A	25	422	119	40	c	
	14		2.01	34	A	18	491	99	38		
	15		1.50	31	A	15	570	78	36		38
6–16	13	M	2.50	28	A	−7	448	95	43	b	
	14		2.00	28	A	−12	513	78	41		
	15		1.50	26	A	−18	590	59	44		43
6–17	13	M	2.50	20	A	−31	473	76	45	b	
	14		2.00	18	A	−33	538	66	41		
	15		1.50	17	A	−35	613	52	43		
	15	T	2.51	26	8	29	404	135	54	c	
	15		2.20	29	8	18	438	124	45		
	15		2.00	29	8	23	466	118	47		
	14	Ty	2.50	47		26	408	94	46	b	
	15		1.99	41		27	478	87	40		
	16		1.50	43		26	549	71	39		43
6–18	13	M	2.50	24	A	−25	466	80	50	b	
	14		2.00	23	A	−28	529	68	46		
	15		1.50	22	A	−27	601	55	41		
	15	T	2.51	37	8	−25	401	117	49	c	
	15		2.20	39	8	−28	439	107	43		
	15		2.00	40	B	−36	462	100	40		
	14	Ty	2.50	34		19	422	92	37	c	
	15		2.00	33		17	489	77	34		
	16		1.50	33		18	563	67	34		44
6–19	13	M	2.49	20	A	−27	475	80	48	c	
	14		2.00	19	A	−32	540	67	48		
	15		1.53	19	A	−30	603	55	47		
	15	T	2.51	31	B	−50	418	104	47	c	
	15		2.20	28	B	−53	461	96	48		
	15		1.99	24	8	−54	497	91	50		48
6–20	13	M	2.49	30	A	−27	458	75	53	b	
	14		2.00	30	A	−28	520	65	52		
	14		1.71	29	A	−30	564	57	54		53
6–21	13	M	2.50	25	A	−23	460	81	47	b	
	14		2.00	26	A	−25	525	69	49		
	15		1.50	22	A	−29	600	54	45		
	15	T	2.50	30	8	32	405	138	45	c	
	15		2.19	29	8	24	439	123	33		
	15		2.00	28	8	26	470	119	39		44
6–22	13	M	2.50	32	A	−16	448	85	50	d	
	14		1.77	31	A	−21	545	65	52		
	15	T	2.50	35	8	17	399	128	52	c	
	15		2.21	36	8	13	436	117	50		
	15		2.00	39	B	13	462	110	54		52
6–23	13	M	2.50	29	A	−22	445	81	47	b	
	14		2.00	29	A	−24	522	69	52		
	15		1.50	29	A	−22	591	57	48		
	15	T	2.50	26	A	23	407	131	39	c	
	15		2.21	27	A	23	448	121	46		
	15		2.00	28	A	23	475	115	45		47
6–24	13	M	2.50	27	A	−8	453	94	51	c	
	14		2.00	25	A	−18	520	75	45		
	14		1.72	25	A	−22	559	65	48		
	15	T	2.50	24	A	26	402	136	29	d	
	15		2.21	24	A	23	442	124	26		
	15		2.01	24	A	19	475	114	38		42
6–25	13	M	2.50	12	A	−36	496	75	41	b	
	14		2.00	11	A	−38	559	64	41		
	15		1.50	11	A	−37	631	52	47		43
			Long method						45		
6–26	13	M	2.50	9	A	−42	509	72	41	b	
	14		2.00	8	A	−43	571	62	42		
	15		1.50	7	A	−41	642	51	46		
1944—Continued											
6–26	14	Ty	2.51	98		81	322	158	47	c	
	14		2.20	98		80	369	143	47		
	15		2.00	103		79	398	131	48		44
6–27	13	M	2.50	6	A	−40	520	74	40	b	
	14		2.00	5	A	−43	581	63	41		
	15		1.50	4	A	−41	648	52	43		
	15	T	2.50	40	8	−80	416	94	54	d	
	15		2.00	47	C	−32	471	84	54		
	16		1.50	59	C	−10	521	85	45		
			Long method						07		
	14	Ty	2.50	56		47	376	126	30	c	
	15		1.99	58		46	443	107	30		
	16		1.50	62		45	515	84	31		39
			Long method						35		
6–28	13	M	2.50	13	A	−29	487	81	41	b	
	14		2.00	13	A	−31	551	69	42		
	15		1.50	12	A	−33	625	54	41		
	15	T	2.50	61	C	25	353	135	21	p	
	15		2.20	65	C	29	388	129	32		
	15		1.99	63	C	25	419	121	28		41
6–29	13	M	2.50	11	A	−24	493	86	42	b	
	14		2.00	10	A	−26	553	74	40		
	15		1.50	9	A	−27	628	59	43		42
6–30	13	M	2.50	35	A	−3	435	96	39	c	
	14		2.01	33	A	−5	498	82	37		
	15		1.50	34	A	−4	573	66	39		
	15	T	2.51	65	C	−31	379	98	40	d	
	15		2.20	62	C	−29	420	93	37		
	15		1.99	62	C	−30	449	87	37		38
7– 1	13	M	2.50	35	A	−11	437	88	39	c	
	14		2.00	33	A	−16	504	73	37		
	15		1.50	34	A	−13	576	60	38		38
7– 2	13	M	2.49	50	B	21	414	105	33	c	
	14		2.00	51	B	23	474	92	35		
	15		1.50	56	B	33	538	79	33		
	15	T	2.51	32	B	−74	423	95	52	d	
	15		2.21	27	B	−68	465	89	44		
	15		2.00	28	B	−73	495	84	49		39
7– 3	15	T	2.51	32	B	−88	426	89	51	c	
	15		2.20	33	B	−82	463	85	48		
	15		2.00	34	B	−81	487	82	50		50
7– 4	15	T	2.51	23	A	−18	447	85	61	d	
	15		2.20	22	A	−19	485	80	52		56
7– 5	15	T	2.51	13	A	−35	466	74	41	b	
	15		2.20	12	A	−30	506	76	46		
	15		2.00	13	A	−30	533	71	48		45
7– 6	15	M	1.64	31	A	−8	554	69	36	c	
	15		1.50	35	A	−13	576	59	45		
	16		1.46	35	A	−17	583	56	47		
	15	T	2.50	27	B	16	408	130	47	c	
	15		2.20	27	B	10	448	119	41		
	15		2.00	26	B	4	478	111	43		43
7– 7	15	T	2.50	37	B	−27	400	116	39	d	
	15		2.20	38	B	−43	444	102	41		
	15		2.00	36	B	−54	468	93	37		39
7– 8	15	T	2.46	38	8	−99	426	86	48	d	
	15		2.20	38	8	−102	460	80	51		
	16		1.80	39	8	−117	513	69	50		50
7– 9	14	M	1.80	9	A	−44	595	58	46	c	
	15		1.63	9	A	−40	620	54	45		
	15		1.52	8	A	−38	637	53	45		
	15	T	2.50	33	B	−93	429	86	55	c	
	15		2.00	36	8	−104	488	75	51		
	16		1.50	39	8	−105	558	65	58		51
			Long method						38		
7–10	14	M	2.20	8	A	−39	544	68	39	c	
	14		2.00	5	A	−42	581	64	41		
	14		1.80	5	A	−44	607	59	41		
	15	T	2.50	16	A	−23	464	84	58	c	
	15		2.19	16	A	−27	507	76	57		
	15		2.00	14	A	−27	533	73	55		
	14	Ty	2.49	110		73	328	140	43	d	
	15		2.00	114		64	403	111	36		
	15		1.80	109		66	435	105	32		46
7–11	13	M	2.50	11	A	−35	497	76	37	b	
	14		2.00	11	A	−38	558	64	38		
	15		1.50	11	A	−36	626	53	42		
			Long method						45		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1944—Continued											
7–11	15	T	2.50	27	B	−88	437	87	51	b	
	15		2.21	27	8	−85	474	83	54		
	15		2.00	27	B	−85	500	79	52		
	14	Ty	2.50	90		58	352	116	46	c	
	14		2.00	86		54	426	96	39		
	15		1.80	87		54	456	90	36		44
7–12	13	M	2.49	14	A	−35	489	75	44	b	
	14		1.80	13	A	−38	581	61	45		
	15		1.49	12	A	−36	624	53	40		
	15	T	2.51	33	B	2	398	126	42	c	
	15		2.21	33	8	−3	441	115	47		
	15		2.00	36	B	8	459	115	38		
	14	Ty	2.50	51		33	399	103	36	d	
	15		2.00	60		40	451	93	34		
	16		1.50	66		47	516	84	33		41
			Long method						29		
7–13	13	M	2.50	18	A	−31	482	76	49	b	
	14		1.99	17	A	−35	547	65	48		
	15		1.50	16	A	−33	617	53	47		
	15	T	2.49	22	A	6	426	115	43	c	
	15		2.20	24	A	7	460	106	40		
	15		1.99	23	A	6	483	104	33		
	14	Ty	2.50	124		100	281	184	40	d	
	15		2.00	121		95	364	150	37		
	16		1.50	124		94	452	123	45		44
7–14	13	M	2.49	18	A	−17	475	90	49	c	
	14		2.00	18	A	−21	537	75	47		
	15		1.50	13	A	−23	618	60	44		
	15	T	2.50	19	A	9	427	121	36	d	
	15		2.20	18	A	3	472	106	40		
	15		2.00	18	A	5	495	103	39		44
7–15	13	M	2.50	15	A	−7	476	100	41	b	
	14		2.00	13	A	−13	545	83	44		
	15		1.50	13	A	−13	613	66	43		
	15	T	2.00	14	A	−14	522	86	44	d	
	16		1.80	17	A	−10	540	83	35		
	16		1.50	27	A	−3	566	76	43		43
7–16	13	M	2.49	27	A	−2	450	100	44	b	
	14		2.00	26	A	−1	513	87	45		
	15		1.49	22	A	−14	600	63	46		
	15	T	2.50	26	B	1	427	125	65	p	
	15		2.20	29	B	−41	459	100	48		
	15		2.00	33	8	−29	473	100	61		45
7–17	13	M	2.50	14	A	−34	489	76	43	b	
	14		2.00	13	A	−36	553	65	42		
	15		1.49	12	A	−37	627	52	45		43
7–18	13	M	2.49	24	A	−33	466	73	46	b	
	14		1.99	22	A	−35	531	63	44		
	15		1.50	23	A	−33	601	51	43		44
7–19	13	M	2.49	23	A	−34	471	72	48	b	
	14		2.00	22	A	−38	535	61	46		
	15		1.50	20	A	−37	610	50	49		48
7–20	15	T	2.50	46	B	−100	412	89	61	d	
	15		2.20	40	8	−100	453	81	48		
	15		2.00	38	8	−105	483	75	47		52
7–21	15	T	2.51	78	D	27	361	107	45	d	
	15		2.21	78	D	26	401	98	42		
	15		2.00	88	D	28	429	92	53		47
7–22	15	T	2.50	29	8	−30	406	113	35	c	
	15		2.20	28	B	−36	456	102	41		
	15		2.00	25	8	−42	484	95	43		40
7–23	13	M	2.51	31	A	−9	439	91	42	b	
	14		2.00	30	A	−15	510	75	42		
	15		1.50	29	A	−14	580	62	38		
	15	T	2.49	27	B	−79	430	91	47	d	
	15		2.20	29	8	−80	469	85	52		
	15		1.99	32	B	−69	482	86	42		42
7–24	13	M	2.49	21	A	−23	466	82	38	c	
	14		1.99	20	A	−23	528	73	33		
	15		1.50	22	A	−5	592	69	37		
			Long method						22		
	15	T	2.50	29	8	−91	433	87	55	c	
	15		2.20	29	B	−94	473	80	53		
	15		2.00	29	B	−94	501	76	58		42
7–25	15	T	2.50	23	A	−9	434	96	54	d	
	15		2.20	22	A	−13	478	86	52		
	15		2.00	21	A	−13	507	82	53		52
1944—Continued											
7–26	13	M	2.50	29	A	−15	450	87	43	b	
	14		1.99	26	A	−19	522	73	44		
	15		1.50	24	A	−16	592	62	42		
	15	T	2.50	49	C	−27	402	99	23	d	
	15		2.00	54	C	−30	470	86	34		
	16		1.50	48	C	−38	547	71	34		40
			Long method						46		
7–27	13	M	2.49	17	A	−27	478	81	41	b	
	14		2.00	17	A	−30	544	69	44		
	15		1.50	13	A	−31	620	55	43		43
7–28	13	M	2.51	15	A	−24	483	85	44	b	
	14		2.00	14	A	−25	545	74	44		
	15		1.50	14	A	−25	614	59	44		
	15	T	2.50	22	A	−14	447	91	61	c	
	15		2.20	22	A	−14	484	85	60		
	15		2.00	21	A	−16	511	79	57		49
7–29	15	T	2.50	18	A	−19	452	88	53	c	
	15		2.20	19	A	−19	490	81	53		
	15		2.00	19	A	−19	513	77	49		52
7–30	14	M	2.00	31	A	0	492	86	25	p	
	14		1.80	31	A	−3	523	79	26		
	15		1.50	29	A	−6	577	66	34		
	15	T	2.51	23	A	−17	440	87	53	c	
	15		2.20	24	A	−18	479	80	50		
	15		2.00	23	A	−18	508	76	55		53
7–31	13	M	2.50	30	A	−1	439	99	38	c	
	14		2.00	29	A	−5	504	84	37		
	15		1.50	27	A	−12	588	63	46		
	15	T	2.50	23	A	−6	435	100	47	b	
	15		2.21	22	A	−8	474	92	45		
	15		2.00	22	A	−9	501	86	49		45
8– 1	15	T	2.50	33	B	−82	423	91	50	c	
	15		2.20	35	8	−91	461	83	50		
	15		2.00	36	8	−96	488	78	52		51
8– 2	15	T	2.50	33	8	−101	432	83	56	d	
	15		2.20	33	8	−107	468	76	56		
	16		1.99	34	B	−109	496	72	59		57
8– 3	13	M	2.49	23	A	−23	466	82	44	b	
	14		1.99	20	A	−28	533	69	44		
	15		1.50	18	A	−29	608	55	45		
	15	T	2.50	17	A	−24	457	83	46	c	
	16		2.00	19	A	−22	516	74	48		
	17		1.50	22	A	−20	577	68	46		45
			Long method						34		
8– 4	13	M	2.49	10	A	−37	505	75	44	b	
	14		2.00	10	A	−39	567	64	47		
	15		1.50	8	A	−40	638	51	45		
	15	T	2.50	16	A	−27	465	80	57	c	
	15		2.21	16	A	−29	503	74	57		
	16		2.00	17	A	−27	524	71	53		49
8– 5	13	M	2.50	21	A	−26	473	80	50	b	
	14		2.00	20	A	−31	538	67	49		
	15		1.50	20	A	−28	610	55	50		
	15	T	2.50	13	A	−29	471	81	52	c	
	16		2.00	13	A	−30	530	71	48		
	16		1.80	14	A	−31	559	67	54		50
8– 6	13	M	2.50	23	A	−29	468	76	55	c	
	14		2.00	21	A	−32	535	65	54		
	15		1.50	19	A	−34	608	52	45		
	15	T	2.50	14	A	−28	473	80	58	c	
	15		2.20	13	A	−31	510	74	51		
	16		1.99	13	A	−32	538	69	55		53
8– 7	13	M	2.50	17	A	−36	482	73	46	c	
	14		2.00	17	A	−36	543	64	43		
	15	T	2.51	11	A	−31	482	79	57	c	
	15		2.20	10	A	−34	521	73	46		
	16		2.00	8	A	−35	549	70	44		46
8– 8	13	M	2.50	11	A	−36	502	75	46	d	
	14		2.00	10	A	−39	565	64	45		
	15		1.50	9	A	−39	634	52	40		
	15	T	2.21	13	A	−28	510	77	54	b	
	16		2.00	13	A	−28	534	73	55		
	16		1.80	14	A	−29	563	68	57		52
8– 9	13	M	2.52	17	A	−10	470	97	40	b	
	13		2.00	15	A	−20	541	77	36		
	15		1.50	13	A	−23	619	60	41		
			Long method						42		
1944—Continued											
8– 9	15	T	2.50	20	B	−92	451	87	56	d	
	15		2.18	23	B	−92	480	81	47		
	16		2.00	26	8	−89	501	78	50		42
8–10	13	M	2.51	14	A	−22	484	87	47	b	
	13		2.00	13	A	−26	550	73	44		
	15		1.50	13	A	−26	626	58	50		47
8–11	13	M	2.50	10	A	−33	506	79	44	b	
	13		2.00	9	A	−38	568	66	43		
	15		1.50	9	A	−38	639	53	49		45
8–15	13	M	2.50	56	8	23	401	104	28	c	
	13		2.00	57	B	22	464	88	29		
	14		1.50	62	B	30	532	75	29		
	16	T	2.20	39	8	−76	447	89	41	c	
	17		2.00	39	B	−81	476	83	43		
	17		1.80	40	B	−83	504	79	46		36
8–16	13	M	2.50	33	A	10	420	108	21	c	
	13		1.99	34	A	9	485	92	25		
	14		1.50	34	A	12	560	75	29		
	15	T	2.51	27	B	−46	426	105	53	c	
	15		2.21	30	B	−51	461	97	43		
	16		2.00	31	B	−53	484	91	49		36
8–17	13	M	2.49	25	A	−22	458	83	39	c	
	13		2.00	21	A	−26	527	70	41		
	14		1.50	18	A	−30	608	54	44		41
8–18	13	M	2.49	20	A	−24	471	82	44	b	
	13		2.00	19	A	−29	538	69	49		
	14		1.50	18	A	−30	608	54	45		46
8–19	13	M	2.49	13	A	−34	493	76	42	b	
	13		2.00	13	A	−38	557	64	44		
	14		1.50	12	A	−37	625	52	44		43
8–20	13	M	2.49	14	A	−28	488	82	44	b	
	13		2.00	13	A	−30	552	70	46		
	14		1.50	13	A	−31	621	55	44		
	15	T	2.50	111	D	47	327	117	39	d	
	15		2.20	115	D	51	370	110	42		
	16		2.00	118	D	50	399	102	42		44
8–21	13	M	2.49	12	A	−32	494	79	44	b	
	13		2.00	12	A	−37	557	65	43		
	14		1.50	12	A	−34	625	54	44		
	15	T	2.50	41	8	−85	412	92	49	c	
	15		2.20	40	B	−92	451	84	47		
	16		2.00	41	8	−96	477	78	45		45
8–22	13	M	2.49	23	A	39	429	139	21	d	
	13		1.99	24	A	41	493	121	19		
	14		1.50	25	A	41	567	96	25		22
8–23	13	M	2.50	22	A	40	429	141	25	d	
	13		2.01	22	A	38	496	119	22		
	14		1.50	19	A	26	584	89	28		25
8–24	15	T	2.50	24	A	−17	446	82	59	c	
	15		2.20	23	A	−19	487	79	59		
	16		2.00	21	A	−21	514	74	57		58
8–26	13	M	2.50	25	A	7	437	109	24	c	
	13		2.00	22	A	−1	510	89	23		
	14		1.50	23	A	2	581	73	22		23
8–27		M	Long method						36		
8–29		Ty	Long method						58		
8–30	15	Ty	2.49	41		69	377	195	42	d	
	15		2.00	40		70	442	167	43		
	16		1.50	44		63	520	124	39		41
8–31	13	M	2.51	8	A	−36	509	77	45	c	
	13		2.00	8	A	−39	573	65	45		
	14		1.50	7	A	−38	641	53	45		
	15	Ty	2.50	77		85	330	187	43	c	
	15		2.01	78		85	407	155	50		
	16		1.50	77		81	489	124	46		45
9– 1	13	M	2.50	11	A	−14	490	95	37	c	
	13		2.00	9	A	−22	559	78	44		
	15	T	2.51	12	A	−9	452	106	40	c	
	16		2.19	12	A	−8	495	99	43		
	16		2.00	11	A	−7	520	95	39		40
9– 2	12	M	2.50	12	A	−26	488	85	33	b	
	13		1.99	11	A	−25	555	74	38		
	14		1.50	10	A	−26	627	59	39		
	15	T	2.50	33	B	−82	426	91	46	c	
	16		2.00	32	B	−83	490	81	47		
	17		1.50	47	B	−71	541	78	54		41
			Long method						24		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1944—Continued											
9- 3	12	M	2.49	16	A	−7	470	99	36	b	
	13		2.00	16	A	−11	538	83	40		
	14		1.50	15	A	−11	607	67	41		
	15	T	2.50	26	8	−97	440	84	16	c	
	16		2.21	26	8	−103	477	77	21		
	16		2.00	27	8	−102	504	73	25		33
9- 4	12	M	2.50	20	A	13	449	117	30	c	
	13		1.99	20	A	11	519	99	35		
	14		1.50	19	A	6	591	77	34		
	15	T	2.50	42	8	−6	376	126	26	d	
	16		2.20	43	8	−13	420	115	31		
	16		2.00	45	8	−14	440	109	27		31
9- 5	12	M	2.50	17	A	0	469	106	41	c	
	13		1.99	15	A	−6	536	87	41		
	14		1.50	16	A	−11	613	67	43		42
9- 6	12	M	2.50	14	A	−15	480	94	40	d	
	13		2.00	14	A	−21	547	77	45		42
9- 7	13	M	2.00	12	A	−28	560	72	49	d	
	13		1.80	11	A	−32	589	65	49		
	14		1.50	11	A	−29	632	57	53		50
9- 8	12	M	2.49	12	A	−24	493	86	45	b	
	13		1.99	12	A	−27	558	73	44		
	14		1.50	10	A	−29	628	58	44		44
9- 9	12	M	2.50	24	A	19	443	121	41	d	
	13		2.00	20	A	8	516	97	35		
	14		1.50	16	A	−9	611	68	46		41
		Ty	Long method						60		
9-10	12	M	2.50	32	A	67	403	163	17	d	
	13		2.00	31	A	66	474	137	17		
	14		1.50	31	A	66	559	108	27		20
9-11	15	Ty	2.50	77		102	290	222	10	p	
	15		2.00	89		113	361	194	34		
	16		1.50	95		118	443	159	47		
9-14	12	M	2.51	11	A	11	468	118	27	d	
	13		2.00	11	A	6	539	98	31		
	14		1.50	10	A	5	611	78	32		30
9-15	16	T	2.50	47	C	−7	391	113	47	d	
	16		2.20	50	C	−3	421	107	41		
	16		2.00	52	C	−2	444	103	39		42
9-17	16	T	1.80	38	8	−68	502	83	47	d	
	17		1.64	37	8	−55	525	83	46		
	17		1.50	36	8	−70	550	76	48		47
9-18	16	T	2.51	51	C	−35	403	93	66	d	
	16		2.20	49	C	−43	445	81	58		
	16		2.00	51	C	−45	472	77	63		62
9-19		M	Long method						38		
	16	T	2.50	25	8	−101	443	83	60	c	
	16		2.20	28	B	−109	478	75	53		
	16		2.00	26	8	−111	506	70	53		
	15	Ty	2.48	58		39	398	107	49	c	
	15		2.00	54		35	463	89	44		
	16		1.50	51		30	566	71	45		50
9-20	12	M	2.19	25	A	7	482	100	34	d	
	13		2.00	24	A	5	511	93	36		
	14		1.50	21	A	0	590	72	38		
	15	Ty	2.50	102		65	344	127	51	c	
	16		2.00	104		63	411	111	41		
	16		1.80	108		63	436	102	34		40
9-21	12	M	2.51	29	A	20	426	120	28	d	
	13		1.99	28	A	18	497	101	30		
	14		1.50	27	A	15	575	80	36		
	16	T	2.50	9	A	−27	480	87	41	c	
	16		2.00	8	A	−28	542	77	46		
	17		1.50	11	A	−32	600	62	37		38
			Long method						29		
9-22	12	M	2.50	27	A	27	433	127	35	c	
	13		1.99	24	A	14	508	100	34		
	13		1.50	23	A	13	582	79	36		
	16	T	2.47	16	A	−4	451	107	44	c	
	16		2.21	14	A	−7	484	98	42		
	16		2.00	14	A	−8	513	92	40		
	15	Ty	2.50	94		62	346	123	47	d	
	16		2.00	103		63	412	107	39		
	17		1.50	103		60	486	87	30		37
9-23	12	M	2.48	22	A	32	428	133	05	p	
	13		1.99	20	A	24	499	109	16		
	13		1.50	18	A	18	579	84	22		
1944—Continued											
9-23	16	T	2.50	29	B	21	403	132	42	d	
	16		2.20	28	8	0	447	116	35		
	16		2.00	26	8	−5	475	108	37		38
9-24	16	T	2.51	72	C	−37	370	96	38	c	
	16		2.21	69	C	−38	415	87	43		
	16		2.00	70	C	−41	441	82	41		41
9-27	12	M	2.50	30	A	40	416	138	20	d	
	12		2.00	33	A	45	482	120	28		
	13		1.50	28	A	33	570	90	36		28
9-28	12	M	2.52	35	A	−7	434	91	41	c	
	12		2.00	34	A	−11	502	76	39		
	13		1.50	38	A	−9	574	61	45		42
			Long method						32		
9-30	15	Ty	2.49	98		74	327	144	34	d	
	15		2.20	96		73	372	132	34		
	16		2.00	96		71	405	120	37		35
10- 1	12	M	2.00	70	8	72	441	128	38	d	
	13		1.80	62	8	65	474	115	38		
	13		1.50	70	8	90	516	113	46		
	16	T	2.00	62	C	−35	436	84	27	d	
	17		1.88	62	C	−30	457	84	32		
	17		1.79	60	C	−32	472	81	39		37
10- 2	12	M	2.51	18	A	−31	482	76	53	b	
	12		2.00	16	A	−33	546	66	47		
	13		1.50	16	A	−33	615	53	44		
	16	T	2.49	42	8	−70	403	100	42	b	
	16		2.20	43	8	−69	441	94	46		
	16		2.00	42	8	−73	473	87	49		
	15	Ty	2.49	53		69	371	179	51	d	
	16		2.00	50		57	449	134	45		
	17		1.50	45		50	531	105	37		47
10- 3	12	M	2.51	25	A	5	460	108	61	b	
	12		2.00	22	A	5	527	94	56		
	13		1.50	20	A	2	600	74	54		
	16	T	2.50	54	C	−33	391	95	46	c	
	16		2.20	56	C	−36	431	87	37		
	16		2.00	55	C	−41	457	80	43		
	15	Ty	2.50	70		61	345	139	18	p	
	16		2.00	72		62	416	121	22		
	17		1.50	78		63	497	99	38		52
10- 4	12	M	2.51	15	A	−33	487	77	48	b	
	12		2.00	14	A	−35	555	66	51		
	13		1.50	13	A	−35	625	53	49		
	15	Ty	2.50	76		46	375	102	44	b	
	16		2.00	79		48	443	88	46		
	17		1.50	76		45	520	72	39		46
10- 5	12	M	2.50	35	A	−8	437	91	45	b	
	12		2.00	39	A	−6	497	78	48		
	13		1.50	40	A	−4	567	63	49		
	16	T	2.53	41	8	−102	412	86	48	b	
	16		2.37	44	8	−107	431	83	55		
	16		2.23	42	8	−106	449	80	54		
	15	Ty	2.50	54		29	405	92	46	b	
	16		2.00	56		31	471	80	46		
	17		1.50	58		32	538	67	40		47
			Long method						62		
10- 6	12	M	2.51	39	A	7	425	102	42	b	
	12		2.00	41	A	14	486	92	42		
	13		1.50	40	A	9	564	71	47		
	15	Ty	2.50	41		28	415	103	44	b	
	15		2.19	39		27	453	95	34		
	16		2.00	39		28	479	91	38		42
10- 7	12	M	2.51	46	A	28	412	117	42	b	
	12		2.00	44	A	17	483	94	39		
	13		1.50	41	A	14	563	74	45		42
10- 8	12	M	2.51	29	A	−9	446	93	51	b	
	12		2.00	28	A	−14	517	77	50		
	13		1.50	24	A	−18	584	61	51		
	16	T	2.51	17	A	−31	459	74	40	b	
	16		2.21	15	A	−34	500	68	44		
	16		2.01	13	A	−35	531	65	44		47
10- 9	12	M	2.51	31	A	9	435	107	38	c	
	12		2.00	32	A	9	502	93	46		
	13		1.50	32	A	10	578	75	49		
	16	T	2.51	13	A	−34	475	75	54	d	
	16		1.99	15	A	−30	531	69	53		
	17		1.50	30	8	−79	555	72	40		46
			Long method						16		
1944—Continued											
10-10	12	M	2.49	26	A	10	450	111	47	a	
	12		2.00	24	A	5	517	93	48		
	13		1.68	24	A	3	561	81	44		46
10-11	12	M	2.49	27	A	14	440	115	46	b	
	12		2.00	27	A	9	513	95	40		
	13		1.50	25	A	4	584	74	45		
	16	T	2.36	15	A	−49	481	56	38	d	
	16		2.21	16	A	−49	502	53	41		
	16		2.00	16	A	−47	528	51	41		42
10-12	12	M	2.50	29	A	−20	452	83	49	a	
	12		2.00	28	A	−21	518	71	48		
	13		1.50	27	A	−22	593	57	50		49
10-13	16	T	2.20	53	C	−56	437	74	39	c	
	17		2.00	54	C	−57	463	70	39		
	17		1.80	52	C	−59	492	66	39		39
10-14	16	T	2.50	29	8	−89	413	88	21	p	
	16		2.21	29	8	−91	454	81	29		
	17		2.00	29	B	−94	482	76	32		
10-16	12	M	2.50	22	A	−16	461	90	47	b	
	12		2.00	22	A	−18	527	76	46		
	13		1.50	20	A	−16	601	62	45		
	16	T	2.50	32	8	−63	408	100	28	c	
	16		2.20	33	8	−59	443	94	27		
	17		2.00	36	8	−54	464	93	26		39
10-17	12	M	2.00	22	A	−27	525	69	42	c	
	12		1.80	22	A	−27	553	65	43		
	13		1.50	21	A	−26	600	56	45		43
10-18	12	M	2.20	23	A	0	488	95	35	b	
	12		2.00	23	A	0	517	89	41		
	13		1.50	21	A	−1	591	71	39		38
10-19	12	M	2.51	17	A	1	460	108	37	b	
	12		1.99	19	A	2	528	93	42		
	13		1.50	15	A	−8	610	69	41		
			Long method						46		
	16	T	2.49	34	8	−84	411	91	29	d	
	16		2.20	37	8	−86	447	85	33		
	17		2.00	38	8	−91	468	80	28		38
10-20	15	Ty	2.50	58		45	373	122	25	p	
	16		2.00	55		43	446	103	31		
	16		1.80	55		51	479	94	30		
10-21	12	M	2.20	23	A	26	479	117	36	c	
	12		2.00	23	A	26	507	109	38		
	13		1.50	24	A	27	578	88	36		
	15	Ty	2.50	71		68	340	154	20	d	
	16		2.00	72		70	409	135	24		
	17		1.50	77		73	489	112	31		33
			Long method						29		
10-22	12	M	2.50	38	A	73	402	164	26	p	
	12		2.00	36	A	69	474	137	25		
	13		1.50	37	A	69	554	108	32		
10-23	12	M	2.51	54	8	83	367	171	22	p	
	12		2.00	52	8	73	444	137	22		
	13		1.50	52	8	76	527	110	30		
10-25	12	M	2.50	29	A	71	424	167	41	c	
	12		2.00	30	A	74	485	144	32		
	13		1.50	27	A	56	572	104	37		37
10-26	12	M	2.50	46	A	88	394	175	33	c	
	12		2.00	42	A	77	468	141	31		
	13		1.50	41	A	102	545	126	35		
	16	T	2.50	106	D	132	268	164	45	d	
	16		2.20	100	D	129	327	143	56		
	17		2.00	101	D	127	355	141	46		38
10-28	14	M	1.23	14	A	−16	657	58	43	d	
	14		1.14	13	A	−8	674	57	45		44
10-29	14	M	1.25	14	A	−19	653	55	42	d	
	14		1.15	13	A	−19	673	52	46		
	15		1.08	14	A	−17	681	49	45		44
10-31	12	M	2.51	26	A	18	441	118	45	b	
	12		2.00	25	A	12	513	98	42		
	13		1.50	24	A	12	586	79	42		
			Long method						46		
	16	Ty	2.50	84		61	356	125	50	d	
	16		2.00	80		56	433	103	44		
	17		1.80	80		57	465	98	46		44
11- 2	13	M	1.50	10	A	−25	626	60	45	c	
	13		1.34	9	A	−29	651	55	40		
	14		1.22	8	A	−30	671	51	41		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1944—Continued											
11- 2	16	T	2.50	112	D	13	362	68	50	c	
	17		2.00	106	D	13	432	64	44		
	19		1.52	105	D	6	513	50	47		
			Long method						56		
	16	Ty	2.50	81		41	386	88	58	c	
	16		2.20	83		43	424	82	58		
	16		2.00	84		43	451	77	57		47
11- 3	12	M	2.50	16	A	-17	473	91	39	b	
	12		2.00	16	A	-18	536	78	45		
	13		1.50	15	A	-21	611	61	44		
	17	Ty	1.80	80		45	475	77	50	c	
	17		1.71	80		45	491	74	50		
	18		1.64	78		43	501	71	53		46
11- 4	12	M	2.51	19	A	-3	461	103	41	b	
	12		2.00	18	A	-7	531	86	46		
	13		1.50	16	A	-10	608	67	43		
	16	Ty	2.50	109		70	326	137	34	p	
	16		2.20	106		68	376	122	37		
	16		2.01	102		67	403	113	36		43
11- 5	12	M	2.50	22	A	9	455	112	45	b	
	12		1.99	20	A	4	524	94	47		
	13		1.50	19	A	2	601	74	50		
	17	Ty	1.72	112		86	428	126	40	p	
	17		1.66	107		78	450	114	42		
	18		1.62	99		72	464	106	37		47
11- 6	12	M	2.51	33	A	8	436	106	48	b	
	12		2.00	31	A	0	509	86	51		
	13		1.49	29	A	-3	583	68	48		49
11- 7	12	M	2.50	35	A	-8	442	91	54	b	
	12		2.00	34	A	-13	513	75	58		
	13		1.50	34	A	-15	572	58	52		55
11- 8	12	M	2.50	25	A	-10	455	93	49	b	
	12		2.00	23	A	-16	526	77	49		
	13		1.49	22	A	-14	602	63	52		
	16	Ty	2.50	18		28	452	129	58	c	
	16		2.20	20		29	486	120	50		
	17		2.00	17		29	519	114	54		51
11- 9	12	M	2.49	30	A	1	444	102	46	b	
	12		2.00	27	A	-1	513	85	49		
	13		1.50	26	A	-5	585	67	45		
	17	T	2.49	52	C	-80	409	63	40	c	
	17		2.20	52	C	-80	446	60	45		
	17		2.00	46	C	-78	477	56	42		45
11-10	15	M	1.04	44	A	112	625	95	28	p	
	16		1.02	45	A	123	625	98	29		
	16		1.01	47	A	134	626	100	34		
	16	Ty	2.50	22		4	463	77	43	b	
	16		2.19	21		4	502	72	39		
	17		2.00	20		5	529	68	44		42
11-11	14	M	1.13	42	A	101	610	96	31	p	
	15		1.07	42	A	102	622	93	33		
	15		1.03	41	A	106	630	91	33		
	16	Ty	2.50	33		11	443	78	51	b	
	16		2.28	33		11	469	74	52		
	17		1.96	34		13	511	68	48		50
11-12	12	M	2.49	42	A	64	405	153	32	c	
	13		1.99	42	A	55	480	124	36		34
			Long method						50		
11-13	13	M	1.50	28	A	-5	588	67	51	c	
	13		1.41	27	A	-3	601	65	44		
	14		1.22	24	A	-12	635	56	39		45
11-14	11	M	2.50	46	A	49	408	136	45	c	
	12		2.00	46	A	41	477	111	41		
	13		1.50	44	A	32	559	85	44		
	16	Ty	2.50	29		14	446	89	58	c	
	16		2.20	30		19	478	89	54		
	17		2.00	32		22	505	87	58		49
11-15	11	M	2.50	35	A	30	422	137	39	c	
	12		2.00	32	A	28	501	108	51		
	13		1.50	27	A	17	582	81	48		46
11-17	11	M	2.51	25	A	37	440	136	52	b	
	12		2.00	23	A	30	513	112	52		
	13		1.50	24	A	28	589	89	49		51
11-18	11	M	2.51	15	A	-2	477	105	55	b	
	12		1.99	14	A	-12	548	84	53		
	13		1.50	12	A	-14	625	63	52		53
1944—Continued											
11-19	13	M	1.50	20	A	14	595	81	46	b	
	13		1.34	19	A	10	622	72	43		
	14		1.21	19	A	10	644	65	43		44
11-20	11	M	2.51	19	A	14	456	118	44	b	
	12		1.99	18	A	8	529	97	43		
	13		1.50	17	A	7	600	78	46		44
11-21	17	T	2.49	27	B	-91	408	86	13	p	
	17		2.20	28	B	-95	457	80	21		
	18		2.00	26	B	-103	487	73	27		
11-22	11	M	2.51	42	A	13	425	106	52	b	
	12		1.99	42	A	6	495	86	53		
	13		1.50	39	A	4	570	69	52		
	17	T	2.51	21	A	-18	440	87	43	b	
	17		2.20	19	A	-24	486	75	43		
	18		2.00	19	A	-31	516	67	40		48
11-23	11	M	2.52	31	A	-1	444	100	49	b	
	12		2.00	29	A	-11	515	79	45		
	13		1.50	29	A	-5	585	67	46		47
			Long method						41		
11-24	11	M	2.49	20	A	-11	472	94	51	b	
	12		1.99	17	A	-22	539	75	45		
	13		1.50	16	A	-18	614	62	52		49
11-25	11	M	2.49	26	A	13	446	113	47	b	
	12		1.99	28	A	7	511	93	48		
	13		1.50	26	A	3	587	72	48		
	18	T	2.20	43	B	-136	452	69	47	c	
	18		2.13	42	B	-134	462	68	44		
	18		2.07	44	B	-135	472	67	50		48
11-26	11	M	2.51	39	A	38	415	131	39	b	
	12		1.99	38	A	33	488	108	41		
	13		1.50	36	A	26	567	83	45		
	18	Ty	2.50	16		9	460	92	42	a	
	19		2.20	16		9	498	85	42		
	19		2.00	16		9	526	79	46		43
11-27	11	M	2.50	62	8	108	361	197	48	c	
	12		2.00	59	B	101	438	160	43		
	13		1.50	58	B	112	518	134	46		
	17	T	2.56	51	C	-91	409	56	40	c	
	18		2.21	47	C	-88	454	54	45		
	18		2.00	46	C	-78	479	56	45		45
11-28	11	M	2.50	78	C	314	308	313	52	p	
	12		2.00	78	C	319	385	266	55		
	13		1.50	77	C	298	479	201	49		
	18	Ty	2.50	15		4	473	83	37	b	
	19		2.20	14		2	518	74	40		
	19		1.99	13		2	547	70	41		39
			Long method						31		
11-30	11	M	2.50	65	8	146	343	235	43	d	
	12		2.00	62	B	138	421	192	42		
	13		1.50	57	B	112	514	142	36		40
12- 1	11	M	2.50	41	A	67	389	156	37	c	
	12		2.00	41	A	59	473	127	33		
	13		1.50	39	A	57	553	101	33		34
12- 2	11	M	2.50	32	A	51	423	147	43	b	
	12		2.00	31	A	49	491	124	39		
	13		1.50	29	A	46	570	98	41		41
12- 3	11	M	2.51	30	A	33	429	131	43	b	
	12		2.00	28	A	25	502	107	46		
	13		1.50	27	A	23	581	85	49		46
12- 4	13	M	1.50	65	B	151	502	160	52	c	
	13		1.33	65	8	164	529	153	51		
	14		1.21	68	8	164	554	140	53		52
12- 5	13	M	1.44	47	B	89	545	117	37	c	
	14		1.29	48	8	92	572	107	39		
	14		1.18	50	B	90	592	96	37		
	17	T	2.50	36	B	-84	413	92	44	c	
	18		2.21	35	B	-69	451	92	45		
	18		2.00	34	B	-58	477	90	45		
	16	Ty	2.50	16		51	436	183	58	b	
	17		2.20	15		48	481	162	57		
	17		2.00	15		51	508	157	62		49
12- 6	17	T	2.50	31	B	-115	431	77	48	c	
	18		2.20	31	B	-126	470	69	43		
	18		2.00	32	8	-144	495	59	43		
	16	Ty	2.49	38		25	424	102	52	b	
	17		2.20	39		28	458	98	50		
	17		2.00	38		27	481	91	52		49
1944—Continued											
12- 7	17	Ty	2.50	29		13	446	86	51	b	
	17		2.20	28		14	481	81	46		
	17		2.00	28		14	511	76	46		48
			Long method						50		
12- 8	17	Ty	2.51	21		15	451	100	45	b	
	17		2.21	23		18	486	95	47		
	17		2.00	23		22	515	96	52		48
12-10	17	Ty	2.50	4		29	492	148	58	b	
	17		2.20	4		33	532	144	62		
	18		2.00	4		35	556	138	68		63
12-13	12	M	2.51	53	B	52	395	136	43	c	
	12		2.00	52	B	42	469	109	40		
	13		1.50	54	8	44	541	88	41		
			Long method						35		
	17	Ty	2.50	22		48	424	170	49	b	
	17		2.20	21		49	461	158	51		
	18		2.00	21		48	493	146	55		48
12-14	17	Ty	2.50	18		11	460	95	41	b	
	17		2.20	18		12	499	89	44		
	18		2.00	17		11	530	82	47		44
12-21	13	M	1.50	83	C	90	507	109	43	d	
	13		1.41	81	C	92	518	105	32		
	14		1.19	75	C	102	563	92	41		39
12-22	14	M	1.18	75	C	95	572	86	47	p	
	15		1.10	77	C	129	580	95	45		
12-24	12	M	2.50	88	C	108	347	177	41	d	
	12		2.00	84	C	109	420	150	40		
	13		1.50	80	C	98	511	112	49		43
			Long method						40		
12-25	12	M	2.51	68	B	85	365	164	45	c	
	12		2.00	65	B	80	441	138	45		
	13		1.50	63	B	72	527	104	47		46
12-26	12	M	2.50	69	8	91	362	172	40	d	
	12		2.00	63	8	83	435	141	37		38
12-27	12	M	2.51	55	8	64	385	150	44	c	
	12		2.00	52	B	60	462	125	54		
	13		1.50	48	B	50	548	94	55		51
12-28	12	M	2.50	54	8	74	391	161	56	c	
	12		2.00	54	8	67	462	131	53		
	13		1.50	47	B	58	545	100	43		51
12-29	12	M	2.51	51	8	59	392	146	43	c	
	12		2.00	48	B	52	468	120	46		
	13		1.50	45	B	46	552	93	43		44
12-30	18	T	2.49	15	A	-24	454	84	39	c	
	18		2.23	13	A	-14	487	96	44		
	19		2.00	12	A	-25	520	77	35		39
12-31	17	Ty	2.50	10		5	489	90	42	b	
	17		2.20	10		5	524	83	41		
	18		2.00	9		3	555	76	43		42
1945											
1- 1	18	T	2.50	80	D	-2	379	66	38	c	
	18		2.19	79	D	-2	422	64	39		
	19		2.01	79	D	-4	446	57	37		38
1- 2	18	T	2.49	12	A	-42	471	65	36	b	
	18		2.20	12	A	-44	507	61	37		
	19		2.00	14	A	-44	531	55	37		37
1- 3	13	M	1.50	148	C	26	481	93	46	p	
	14		1.41	151	C	30	494	91	44		
	14		1.27	149	C	34	521	83	44		
1- 4	16	M	1.04	143	C	179	542	115	39	p	
	16		1.02	141	C	213	542	125	39		
	17	T	2.50	23	A	-30	439	70	35	b	
	18		2.13	23	A	-31	486	65	37		
	19		2.01	23	A	-32	499	61	33		36
			Long method						34		
1- 8	17	T	2.49	55	C	-75	402	66	31	d	
	18		2.00	50	C	-80	467	55	32		
	19		1.96	46	C	-81	479	54	36		
	17	Ty	2.50	17		4	473	82	47	c	
	17		2.20	16		4	514	75	49		
	18		1.99	16		4	538	71	44		41
1- 9	17	Ty	2.50	23		17	441	102	37	b	
	17		2.20	24		17	481	91	37		
	18		2.00	25		18	506	86	40		38
1-11	17	T	2.50	40	8	-122	400	77	22	d	
	18		2.20	39	B	-135	442	68	23		
	19		2.00	41	B	-124	465	68	28		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
1–11	17	Ty	2.20	68		43	430	96	54	d	
	17		2.05	66		42	453	91	54		
	18		1.97	65		41	465	88	55		39
1–12	14	M	1.27	173	C	128	476	122	30	p	
	14		1.19	166	C	144	501	118	29		
	17	T	2.50	35	B	—122	397	76	00	p	
	18		2.20	35	B	—133	441	68	06		
	18		1.99	34	B	—126	470	66	13		
	17	Ty	2.50	68		44	379	108	45	c	
	17		2.20	68		47	423	104	53		
	18		2.00	64		46	452	100	50		40
1–13	17	T	2.50	62	C	—93	392	56	24	c	
	18		2.19	62	C	—86	435	57	31		
	18		1.99	62	C	—83	458	55	32		
	17	Ty	2.50	32		17	432	92	46	b	
	17		2.20	32		17	457	83	48		
	18		2.00	32		16	501	76	47		40
1–14	12	M	2.00	150	C	150	366	186	47	c	
	13		1.79	155	C	155	398	174	50		
	13		1.50	146	C	126	459	136	46		
	17	T	2.49	80	D	—11	373	56	22	d	
	18		2.19	82	D	—9	413	54	26		
	18		2.00	81	D	—9	442	50	31		
	17	Ty	2.50	35		16	420	86	31	b	
	17		2.20	29		13	467	79	31		
	18		2.00	28		13	498	75	32		36
1–15	12	M	2.50	116	C	109	326	186	46	c	
	12		2.00	121	C	105	394	156	45		
	13		1.50	123	C	104	477	118	44		45
1–16	12	M	2.21	107	C	89	375	157	40	c	
	12		2.00	103	C	87	410	142	43		
	13		1.50	101	C	87	494	112	43		42
1–18	12	M	2.50	113	C	100	322	180	41	c	
	12		2.00	109	C	93	400	147	39		
	13		1.50	110	C	79	491	110	45		
	17	T	2.50	13	A	—29	452	80	35	c	
	18		2.20	12	A	—31	494	75	32		
	18		2.00	11	A	—29	525	73	38		
	17	Ty	2.00	35		26	485	92	45	c	
	18		1.89	34		25	502	88	44		
	18		1.80	34		26	517	87	51		41
1–19	12	M	2.20	88	C	117	380	168	43	d	
	12		2.00	87	C	114	414	154	43		43
1–20	12	M	2.00	117	C	175	372	194	37	d	
	13		1.80	121	C	168	408	176	42		
	13		1.49	121	C	182	462	156	42		
	17	T	2.51	19	A	—32	442	73	37	d	
	18		2.19	20	A	—30	475	69	38		39
1–24	17	Ty	2.49	10		6	484	92	35	b	
	17		2.20	10		7	520	86	38		
	18		1.85	11		7	565	78	39		37
			Long method						46		
1–27	14	M	1.20	90	C	83	561	88	43	c	
	15		1.12	88	C	102	570	88	44		
	15		1.06	87	C	98	582	82	45		44
1–29	15	M	1.10	79	C	108	581	87	45	d	
	15		1.06	80	C	118	586	88	42		
	16	Ty	2.49	11		18	459	116	30	d	
	17		2.19	13		20	492	109	27		
	17		2.00	12		20	522	104	34		38
1–30	16	Ty	2.50	16		16	451	106	28	c	
	17		2.20	17		16	488	98	33		
	17		2.00	18		17	513	93	34		32
2– 1	12	M	2.20	100	C	172	367	205	55	d	
	13		2.00	98	C	179	392	192	49		
	13		1.50	98	C	172	482	148	47		50
2– 2	12	M	2.51	88	C	126	336	191	51	c	
	13		2.00	84	C	109	419	150	48		
	13		1.50	80	C	110	499	119	48		
			Long method						41		
	16	Ty	2.50	89		41	380	85	56	d	
	17		2.23	93		41	415	79	55		
	17		2.00	94		44	446	77	55		49
2– 4	13	M	1.50	111	C	125	480	131	45	p	
	14		1.32	97	C	131	523	117	49		
2– 5	13	M	1.50	68	B	23	545	67	38	d	
	14		1.41	68	B	24	551	65	37		
	14		1.34	65	B	23	564	63	32		36
1945—Continued											
2– 6	12	M	2.20	82	C	133	415	115	51	d	
	13		2.00	80	C	130	447	105	51		
	13		1.50	70	B	41	532	80	43		48
2– 7	14	M	1.30	77	B	65	554	84	45	d	
	15		1.19	74	B	63	578	75	47		
	17	Ty	2.02	32		27	490	98	47	c	
	17		1.93	33		28	502	95	50		
	17		1.85	33		27	516	91	52		48
2– 8	12	M	2.50	83	C	157	350	209	75	p	
	13		1.99	83	C	146	425	169	60		
	13		1.50	79	C	146	506	133	57		
2– 9	12	M	2.51	68	B	82	376	162	65	d	
	13		2.00	65	B	72	448	130	51		
	13		1.50	64	B	74	529	105	53		
	17	T	2.50	31	B	—131	417	70	21	d	
	17		2.21	34	B	—137	452	66	26		
	18		2.00	35	B	—133	477	64	28		
	16	Ty	2.50	38		36	419	123	59	p	
	17		2.20	38		57	442	156	67		
	17		2.00	40		67	458	161	67		52
2–10	12	M	2.50	85	C	114	348	181	65	p	
	13		2.00	87	C	116	416	155	46		
	16	Ty	2.50	57		68	358	172	44	c	
	17		2.20	60		73	393	164	42		
	17		2.00	62		77	419	158	47		48
2–11	16	Ty	2.50	55		68	370	171	59	p	
	17		2.20	53		75	408	175	58		
	17		2.00	55		86	427	182	60		
2–13	15	M	1.11	130	C	161	527	114	31	d	
	16		1.07	132	C	141	546	104	38		
	19	Ty	1.48	48		30	550	73	47	d	
	19		1.46	48		30	554	72	47		
	19		1.44	49		31	555	72	44		40
2–14	16	Ty	2.50	27		18	445	97	52	c	
	17		2.00	28		19	507	85	50		
	17		1.80	29		21	534	82	51		47
			Long method						42		
2–16	15	M	1.18	72	B	59	574	74	34	d	
	15		1.08	70	B	61	595	72	36		
	17	T	2.22	43	B	—5	428	119	52	d	
	17		2.11	42	B	—11	444	112	47		
	17		2.00	42	B	—28	462	103	52		43
2–17	14	M	1.50	83	C	141	501	132	50	d	
	14		1.33	85	C	128	531	114	46		
	15		1.21	75	C	115	562	98	49		
	17	T	2.21	56	C	—35	419	90	51	c	
	17		2.10	56	C	—36	436	86	48		
	17		2.00	56	C	—41	452	81	52		
	16	Ty	2.50	11		20	470	120	43	d	
	17		2.00	17		24	522	106	48		
	17		1.80	18		25	548	100	52		49
2–18	14	M	1.50	87	C	109	505	119	51	d	
	14		1.34	84	C	115	532	109	46		
	14		1.22	87	C	114	553	101	45		
	16	Ty	2.50	32		29	426	116	54	d	
	16		2.20	33		28	461	104	47		
	17		2.00	34		28	485	97	43		47
2–19	12	M	2.50	96	C	170	333	217	72	d	
	13		2.00	91	C	157	407	179	48		
	14		1.50	89	C	150	495	137	51		
			Long method						51		
	16	Ty	2.50	32		22	435	101	51	b	
	17		2.00	31		21	499	86	47		
	17		1.80	32		21	528	80	48		50
2–20	12	M	2.50	58	B	82	381	169	53	d	
	13		2.00	53	B	73	454	137	43		
	14		1.50	53	B	78	532	112	43		46
2–21	12	M	2.51	89	C	103	352	174	59	d	
	13		2.00	85	C	98	422	144	46		
	14		1.50	83	C	92	507	110	47		51
2–22	12	M	2.20	97	C	117	379	171	47	p	
	13		2.00	96	C	118	408	158	53		
	17	T	2.51	27	A	—33	435	64	43	d	
	17		2.36	27	A	—33	454	62	40		
	16	Ty	2.51	21		17	439	103	33	b	
	17		2.00	25		19	502	89	37		
	17		1.80	27		20	530	82	41		40
1945—Continued											
2–25	17	Ty	1.59	30		50	540	120	54	c	
	18		1.53	33		53	548	121	51		
	18		1.46	35		58	549	122	53		53
2–26	16	M	1.05	99	C	95	573	82	43	d	
	16		1.04	100	C	93	578	81	48		
	16	T	2.50	7	A	—25	470	90	28	b	
	17		2.21	7	A	—25	508	84	34		
	17		2.00	8	A	—28	533	77	33		
	16	Ty	2.50	13		33	432	148	21	c	
	16		2.00	16		35	496	127	29		
	17		1.80	14		32	528	115	32		35
			Long method						28		
3– 3	12	M	2.50	163	C	221	261	271	43	p	
	13		2.00	165	C	212	340	224	39		
	14		1.50	166	C	176	441	160	43		
	15	Ty	2.50	30		39	415	140	47	c	
	16		2.01	30		40	481	123	48		
	17		1.80	31		39	514	112	54		47
3– 4	12	M	2.50	137	C	112	309	193	53	d	
	13		1.99	143	C	100	386	156	49		
	14		1.50	134	C	94	472	120	43		48
3– 5	13	M	1.79	120	C	125	426	152	51	d	
	14		1.50	116	C	111	479	124	43		
	14		1.33	117	C	108	516	111	48		47
3– 6	13	M	1.75	92	C	43	470	105	43	c	
	14		1.50	90	C	51	510	96	46		
	14		1.34	94	C	56	537	88	48		46
3– 7	12	M	2.51	72	B	50	383	124	47	c	
	13		2.00	74	B	46	448	104	38		
	14		1.50	71	B	44	533	82	43		
			Long method						36		
	16	Ty	2.20	25		50	445	156	32	d	
	16		2.00	23		50	477	148	36		
	16		1.80	20		45	515	132	38		40
3– 8	12	M	2.51	43	A	8	422	100	44	b	
	13		2.00	39	A	—1	496	82	47		
	14		1.50	39	A	—3	568	65	43		
	18	T	1.44	16	A	96	537	157	22	d	
	19		1.41	16	A	91	543	152	17		
	19		1.38	16	A	80	549	144	18		
	16	Ty	2.51	16		131	359	359	56	d	
	16		2.01	18		110	444	263	52		
	17		1.80	20		90	528	184	42		42
3– 9	12	M	2.50	44	A	14	421	105	51	c	
	13		1.99	39	A	7	494	88	48		
	14		1.50	41	A	6	566	69	47		
	18	Ty	1.41	28		38	572	97	43	c	
	18		1.37	29		35	581	92	42		
	18		1.33	27		32	591	87	41		45
3–10	12	M	2.51	40	A	23	417	116	43	d	
	13		2.00	40	A	23	480	100	37		
	14		1.50	42	A	24	557	80	42		41
3–11	14	M	1.50	32	A	—3	575	67	47	c	
	14		1.42	34	A	—2	591	64	47		
	14		1.29	36	A	1	606	61	43		46
3–12	12	M	2.50	27	A	—9	449	93	45	b	
	13		2.00	24	A	—18	524	76	49		
	14		1.50	33	A	—20	596	59	44		46
3–13	14	M	1.50	33	A	4	575	71	47	d	
	14		1.35	41	A	19	588	70	45		
	15		1.24	28	A	—4	621	58	40		44
3–14	13	M	2.00	27	A	—8	514	82	48	c	
	14		1.50	24	A	—14	591	63	47		48
3–15	12	M	2.51	33	A	3	436	102	49	c	
	13		2.00	32	A	—2	503	85	52		
	14		1.50	25	A	—14	594	62	48		50
3–16	12	M	2.50	62	B	36	399	115	49	c	
	13		1.99	61	B	30	465	94	41		
	14		1.50	55	B	19	549	69	44		45
3–17	12	M	2.50	59	B	37	402	119	54	c	
	13		2.00	52	B	27	473	95	44		
	14		1.50	46	B	22	555	75	42		47
3–18	12	M	2.51	47	A	27	413	117	45	c	
	13		2.01	44	A	22	482	97	46		
	14		1.50	41	A	14	563	74	44		
	15	Ty	2.51	46		116	310	290	26	p	
	16		2.00	48		119	390	248	40		
	17		1.50	49		104	490	180	52		42

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
3–19	12	M	2.50	38	A	16	427	110	48	b	
	13		2.00	35	A	8	495	90	45		
	14		1.50	33	A	3	574	70	49		
	15	Ty	2.49	13		52	417	189	28	d	
	16		2.00	16		51	487	156	40		
	16		1.79	17		52	513	145	41		43
3–20	13	M	1.80	60	B	53	482	107	40	d	
	14		1.50	57	B	52	534	93	39		
	17	T	1.94	36	B	98	436	145	20	p	
	17		1.85	33	B	98	445	139	07		
	17		1.77	34	B	84	452	132	02		
	15	Ty	2.49	15		29	430	136	09	d	
	16		2.00	16		29	500	115	26		
	17		1.50	18		25	577	89	32		36
			Long method						08		
3–26	15	Ty	2.50	25		24	431	112	36	c	
	16		2.00	26		26	497	100	39		
	17		1.50	27		26	572	83	42		39
3–27	15	M	1.32	69	B	94	543	104	41	d	
	15		1.22	64	B	85	564	93	34		
	16		1.15	70	B	96	573	92	42		39
3–29	14	M	1.39	70	B	46	540	78	39	d	
	15		1.28	71	B	53	559	78	43		41
3–30	16	M	1.18	54	B	28	598	62	44	c	
	16		1.14	55	B	32	604	61	47		
	16		1.12	57	B	33	607	60	45		45
3–31	12	M	2.51	60	B	41	392	122	42	c	
	13		2.00	57	B	34	463	99	37		
	14		1.50	53	B	26	544	74	41		41
			Long method						43		
4– 1	12	M	2.50	72	B	43	387	117	48	c	
	13		2.00	70	B	36	456	95	41		
	14		1.50	63	B	31	537	75	41		43
4– 2	12	M	2.50	47	B	29	411	116	42	c	
	13		2.00	45	B	25	477	97	38		
	14		1.50	51	B	32	548	81	43		41
4– 3	14	M	1.50	70	B	62	522	95	41	d	
	14		1.36	68	B	59	550	86	44		42
4– 4	13	M	2.50	91	C	89	348	166	52	d	
	13		2.00	86	C	84	424	137	48		
	14		1.51	88	C	83	501	108	44		48
4– 5	13	M	2.50	75	C	71	371	149	54	d	
	13		2.00	79	C	68	436	126	50		
	14		1.50	81	C	68	510	101	40		48
4– 6	13	M	2.50	75	B	82	365	160	55	d	
	13		2.00	73	B	78	436	133	44		
	14		1.50	62	B	66	525	101	41		47
4– 7	13	M	2.50	74	B	79	367	157	53	c	
	13		2.00	74	B	76	436	131	45		
	14		1.50	73	B	75	517	103	47		48
4– 8	13	M	2.51	50	B	33	405	119	43	c	
	13		2.00	47	B	28	477	99	44		
	14		1.50	45	B	23	556	76	40		42
4– 9	13	M	2.50	44	A	18	417	110	42	c	
	13		2.00	45	A	15	481	92	42		
	14		1.50	36	A	7	567	72	44		43
4–10	13	M	2.49	40	A	6	430	101	49	c	
	13		2.00	38	A	0	497	83	49		
	14		1.50	39	A	1	569	67	50		49
4–11	13	M	2.50	46	A	25	414	115	42	c	
	13		2.00	44	A	14	486	92	42		
	14		1.50	43	A	13	565	73	49		46
			Long method						51		
4–12	13	M	2.50	40	A	19	426	112	52	c	
	13		1.99	31	A	8	495	92	46		
	14		1.50	36	A	7	572	72	51		50
4–13	13	M	2.50	34	A	—9	438	93	47	b	
	13		2.00	32	A	—13	506	76	45		
	14		1.50	30	A	—15	583	60	46		46
4–14	13	M	2.52	35	A	—13	441	86	54	b	
	13		2.00	33	A	—20	510	70	53		
	14		1.51	31	A	—22	584	55	50		52
4–15	13	M	2.49	44	A	11	426	104	54	b	
	13		1.99	41	A	7	490	87	49		
	14		1.50	42	A	6	562	69	49		51
4–16	13	M	2.50	37	A	—3	436	93	55	b	
	13		2.00	34	A	—10	507	77	51		
	14		1.50	32	A	—11	580	62	47		51
1945—Continued											
4–17	13	M	2.50	28	A	—19	456	84	53	c	
	13		2.01	29	A	—19	515	73	48		
	14		1.50	24	A	—25	596	56	47		49
4–18	13	M	2.50	29	A	—9	450	93	51	b	
	13		1.99	27	A	—16	523	76	52		
	14		1.50	22	A	—26	600	56	47		50
4–19	13	M	2.49	15	A	—32	488	77	49	b	
	13		2.00	15	A	—33	559	67	48		
	14		1.50	13	A	—36	626	52	48		48
4–20	13	M	2.50	20	A	—24	470	83	45	b	
	13		2.00	19	A	—28	536	80	47		
	14		1.50	16	A	—29	610	55	43		45
4–21	13	M	2.50	14	A	—29	486	81	47	b	
	13		2.00	13	A	—30	551	70	49		
	14		1.50	13	A	—31	626	55	50		49
4–22	13	M	2.00	14	A	—30	553	70	52	c	
	14		1.50	12	A	—32	626	55	50		51
4–23	13	M	2.50	26	A	—10	452	92	47	b	
	13		2.00	26	A	—13	518	78	46		
	14		1.50	25	A	—13	591	63	46		46
4–24	13	M	2.50	23	A	—11	461	93	47	b	
	13		2.00	23	A	—12	525	80	46		
	14		1.50	22	A	—17	599	62	47		45
			Long method						39		
4–25	13	M	2.50	22	A	—17	463	89	47	b	
	13		2.00	21	A	—19	531	75	49		
	14		1.50	18	A	—22	606	59	49		48
4–26	13	M	2.50	31	A	5	439	104	49	c	
	13		2.00	30	A	1	506	88	44		
	14		1.50	29	A	9	579	76	46		46
4–27	13	M	2.49	42	A	9	428	103	50	c	
	13		2.00	41	A	5	493	85	49		
	14		1.50	40	A	4	568	68	46		48
4–28	13	M	2.50	43	A	—12	435	82	56	c	
	13		2.00	44	A	—13	497	71	54		
	14		1.50	41	A	—10	568	59	47		52
4–29	13	M	2.01	37	A	—12	503	74	55	c	
	14		1.50	31	A	—22	587	57	45		50
4–30	13	M	2.51	46	A	—9	428	84	55	c	
	13		2.01	42	A	—14	495	71	48		
	14		1.50	43	A	—14	573	56	54		52
5– 1	13	M	2.50	41	A	—12	432	83	47	b	
	13		2.00	40	A	—13	498	72	48		
	14		1.50	37	A	—15	570	58	42		46
5– 2	13	M	2.50	45	A	1	423	93	51	c	
	13		2.00	43	A	—5	493	77	49		
	14		1.50	38	A	—10	568	60	46		49
5– 3	13	M	2.49	54	B	33	407	116	46	c	
	13		2.00	49	B	26	474	96	43		
	15		1.50	45	B	16	556	71	38		42
5– 4	13	M	2.49	51	B	22	409	106	41	d	
	13		2.00	49	B	20	470	91	30		
	15		1.50	48	B	16	553	70	39		37
5– 5	13	M	2.50	39	A	12	425	107	45	c	
	13		2.00	33	A	3	499	88	46		
	15		1.50	28	A	—8	583	65	49		47
5– 6	13	M	2.49	39	A	4	430	99	51	c	
	13		2.00	41	A	1	494	82	54		
	15		1.50	38	A	—2	575	65	55		53
5– 7	13	M	2.49	48	A	17	419	106	50	c	
	13		2.00	43	A	5	487	85	46		
	15		1.50	30	A	—10	577	63	41		46
5– 8	13	M	2.50	39	A	—10	437	86	55	c	
	13		2.00	39	A	—14	501	72	52		
	15		1.50	37	A	—15	575	58	49		52
5– 9	13	M	2.49	37	A	—9	440	88	46	b	
	13		2.00	38	A	—10	502	75	46		
	15		1.50	35	A	—14	578	58	44		45
			Long method						38		
5–10	13	M	2.50	40	A	—3	435	92	56	c	
	13		2.00	37	A	—8	499	77	50		
	15		1.50	33	A	—14	581	60	49		52
5–11	13	M	2.50	28	A	—10	450	92	47	c	
	13		2.00	26	A	—16	520	76	47		
	15		1.50	23	A	—20	590	60	36		43
5–12	13	M	2.49	37	A	23	426	117	43	c	
	13		2.00	34	A	17	494	98	43		
	15		1.50	31	A	11	573	76	42		43
1945—Continued											
5–13	13	M	2.49	34	A	12	431	109	45	b	
	13		2.00	34	A	7	497	90	42		
	15		1.50	32	A	2	574	70	42		43
5–14	13	M	2.50	30	A	—13	446	88	46	c	
	14		2.00	30	A	—14	515	76	51		
	15		1.50	27	A	—17	588	60	43		47
5–15	13	M	2.50	49	B	2	423	85	42	b	
	14		1.99	49	B	1	489	73	43		
	15		1.50	47	8	—1	562	58	41		42
5–16	13	M	2.50	39	A	—14	436	83	47	b	
	14		2.00	39	A	—17	512	70	53		
	15		1.50	37	A	—19	578	55	52		51
5–17	13	M	2.49	14	A	—37	495	74	46	b	
	14		2.00	13	A	—39	556	63	45		
	15		1.50	12	A	—39	626	51	43		
	15	T	2.00	22	A	67	463	164	47	d	
	16		1.80	20	A	77	491	164	45		
	16		1.50	23	A	92	533	161	48		46
5–18	13	M	2.50	12	A	—31	495	80	47	b	
	14		2.00	12	A	—32	558	69	49		
	15		1.50	11	A	—33	631	54	49		48
5–19	13	M	2.50	14	A	—28	488	82	48	b	
	14		2.00	13	A	—30	552	70	46		
	15		1.50	12	A	—32	626	55	44		47
5–20	13	M	2.49	13	A	—25	486	85	39	b	
	14		2.01	12	A	—26	552	74	47		
	15		1.50	11	A	—31	627	56	45		
	16	T	1.54	25	A	28	538	107	37	d	
	16		1.48	24	A	26	553	104	40		
	16		1.43	24	A	26	559	101	37		42
5–21	13	M	2.50	41	A	—8	435	86	52	b	
	14		2.01	41	A	—10	497	74	52		
	15		1.50	38	A	—15	577	57	51		
	15	T	1.99	59	C	—35	448	84	38	d	
	16		1.80	59	C	—32	476	81	41		
	16		1.50	67	C	—37	514	73	35		47
5–22	13	M	2.49	51	B	26	413	109	44	c	
	14		2.00	50	B	20	477	90	42		
	15		1.50	50	B	20	556	72	45		
	16	T	1.84	77	B	17	460	80	47	d	
	16		1.75	78	B	18	473	78	49		
	16		1.48	80	B	15	515	69	48		46
5–23	13	M	2.50	41	A	8	426	102	47	c	
	14		2.01	40	A	4	490	85	38		
	15		1.50	41	A	3	569	67	45		
	15	T	2.00	40	B	135	441	161	63	p	
	16		1.80	41	B	145	471	154	64		
	16		1.50	41	B	131	532	135	64		48
5–25	15	T	2.20	20	A	88	423	201	42	d	
	15		2.00	16	A	87	466	189	47		
	16		1.80	15	A	88	501	178	49		46
5–26	16	T	1.70	66	C	52	464	127	48	c	
	16		1.63	66	C	58	473	127	48		
	16		1.55	66	C	66	484	127	50		49
5–27	13	M	2.51	9	A	—39	513	74	48	b	
	14		2.00	8	A	—41	576	63	48		
	15		1.50	7	A	—44	645	50	47		48
			Long method						50		
5–28	13	M	2.50	8	A	—32	515	80	52	c	
	14		2.00	8	A	—36	577	67	49		
	15		1.50	7	A	—40	640	52	40		47
5–29	13	M	2.49	22	A	—29	474	77	57	b	
	14		2.00	21	A	—32	537	65	51		
	15		1.50	20	A	—35	609	51	48		52
5–30	13	M	2.50	27	A	—21	462	83	51	b	
	14		2.00	25	A	—26	526	69	49		
	15		1.50	23	A	—23	600	58	52		51
5–31	13	M	2.50	21	A	—23	473	83	54	b	
	14		2.00	20	A	—27	530	70	42		
	15		1.50	19	A	—30	610	54	48		48
6– 1	13	M	2.49	15	A	—23	482	86	43	b	
	14		1.99	15	A	—24	543	74	44		
	15		1.50	13	A	—23	618	60	46		44
6– 3	13	M	2.49	27	A	—8	451	94	47	b	
	14		2.00	30	A	—10	515	79	48		
	15		1.50	26	A	—8	586	66	44		46
6– 4	13	M	2.50	33	A	—10	443	90	51	b	
	14		2.00	31	A	—16	514	74	51		
	15		1.50	28	A	—21	588	57	46		49

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
6– 5	13	M	2.49	24	A	—24	463	81	44	b	
	14		2.00	21	A	—28	532	68	46		
	15		1.50	21	A	—26	602	56	47		46
6– 6	13	M	2.50	11	A	—29	492	81	42	b	
	14		2.00	10	A	—34	561	68	47		
	15		1.50	9	A	—35	634	54	51		
	15	T	2.20	15	A	18	472	124	34	c	
	15		2.00	17	A	13	489	112	35		
	16		1.80	19	A	15	516	106	38		44
6– 7	13	M	2.50	5	A	—34	523	80	47	a	
	14		2.00	3	A	—41	592	65	46		
	15		1.50	1	A	—38	659	54	47		
	16	T	1.65	19	A	16	541	105	38	c	
	16		1.58	19	A	13	553	98	41		
	16		1.52	18	A	11	563	94	47		45
6– 8	14	M	2.00	13	A	—30	553	70	48	a	
	14		1.80	13	A	—31	580	65	47		
	15		1.50	13	A	—27	625	58	50		48
6– 9	13	M	2.49	9	A	—30	506	82	41	b	
	14		2.00	9	A	—35	569	68	42		
	15		1.50	7	A	—35	640	55	46		
			Long method						40		
	15	T	2.49	39	8	201	333	214	28	d	
	15		2.19	40	8	186	380	190	28		
	15		1.99	42	8	190	411	180	30		40
6–10	13	M	2.49	11	A	—33	504	78	49	b	
	14		2.00	10	A	—34	567	68	52		
	15		1.50	10	A	—37	635	53	47		49
6–11	13	M	2.50	13	A	—29	506	81	50	b	
	14		2.00	9	A	—34	568	69	47		
	15		1.50	8	A	—31	635	57	46		48
6–12	13	M	2.50	13	A	5	478	112	48	b	
	14		2.00	13	A	—4	545	90	44		
	15		1.50	14	A	—11	613	68	47		
	15	T	2.20	79	D	35	395	109	45	c	
	15		2.00	78	D	31	424	99	44		
	16		1.79	77	D	33	449	96	41		45
6–13	13	M	2.49	14	A	—17	486	92	44	b	
	14		2.00	12	A	—23	549	76	39		
	15		1.50	11	A	—24	626	60	46		
	15	T	2.49	17	A	—31	451	74	47	b	
	15		2.20	17	A	—33	492	68	45		
	15		2.00	16	A	—36	520	62	40		44
6–14	13	M	2.50	21	A	—8	461	97	43	b	
	14		2.00	19	A	—12	529	82	41		
	15		1.50	19	A	—15	602	64	43		42
6–15	13	M	2.50	33	A	20	427	117	37	b	
	14		1.99	33	A	15	495	97	37		
	16		1.50	32	A	11	568	76	38		37
6–16	13	M	2.51	30	A	0	438	100	41	b	
	14		2.00	29	A	—5	503	84	36		
	16		1.50	28	A	—5	582	67	41		
	15	T	1.99	44	8	120	434	156	50	d	
	15		1.89	44	8	106	452	147	50		
	16		1.79	43	8	93	472	138	55		42
6–17	14	M	2.49	37	A	—3	428	93	38	b	
	14		2.00	37	A	—7	498	78	45		
	15		1.50	36	A	—6	573	64	45		
	15	T	2.50	45	8	—87	395	93	43	d	
	15		2.20	43	8	—77	436	91	39		42
6–18	13	M	2.50	40	A	—8	430	87	45	b	
	14		1.99	40	A	—11	497	74	43		
	16		1.50	44	A	—8	563	60	47		
	15	T	2.50	39	8	—48	384	108	23	d	
	15		2.20	41	8	—37	420	104	25		
	15		2.00	43	8	—35	443	101	28		42
6–19	13	M	2.51	34	A	—19	441	80	50	b	
	14		1.99	34	A	—23	511	67	44		
	16		1.50	33	A	—18	582	58	47		47
6–20	13	M	2.51	30	A	—25	453	78	50	b	
	14		2.00	29	A	—27	516	67	42		
	16		1.50	32	A	—11	580	62	45		46
6–24	13	M	2.49	35	A	—17	437	82	40	c	
	14		2.00	32	A	—23	515	69	53		
	16		1.50	33	A	—25	583	53	45		46
6–25	13	M	2.50	35	A	—29	455	72	60	c	
	14		2.00	32	A	—32	522	62	55		
	16		1.50	28	A	—33	596	50	47		54
1945—Continued											
6–26	13	M	2.50	16	A	—37	488	72	44	c	
	14		2.00	15	A	—40	550	62	36		
	16		1.50	12	A	—41	627	50	33		36
			Long method						25		
6–27	13	M	2.50	15	A	—37	492	73	48	b	
	14		2.00	15	A	—38	551	63	46		
	16		1.50	15	A	—36	621	52	46		47
6–28	13	M	2.50	13	A	—36	496	74	47	a	
	14		2.00	13	A	—39	558	63	47		
	16		1.50	12	A	—39	630	51	48		47
6–29	15	Ty	2.00	75		104	383	195	40	d	
	15		1.80	74		104	418	181	43		
	16		1.50	74		102	470	157	44		42
6–30	13	M	2.50	44	A	56	397	145	16	d	
	14		2.00	40	A	50	469	121	20		
	16		1.50	43	A	52	544	97	22		
	15	T	2.50	45	C	—59	392	75	11	d	
	15		2.00	49	C	—58	458	68	19		
	16		1.50	55	C	—52	523	64	25		
			Long method						08		
	15	Ty	2.00	58		74	415	158	27	d	
	15		1.80	59		81	440	156	30		
	16		1.49	58		82	489	139	31		20
7– 1	13	M	2.50	68	8	97	358	178	41	p	
	14		2.00	63	8	82	435	150	32		
	16		1.50	49	8	25	528	76	12		
7– 2	13	M	2.50	8	A	—38	510	75	42	b	
	14		2.00	7	A	—41	575	64	45		
	16		1.50	4	A	—41	649	52	47		45
7– 3	13	M	2.50	9	A	—40	515	73	51	b	
	14		2.01	10	A	—41	568	63	53		
	16		1.50	13	A	—34	625	54	42		49
7– 5	13	M	2.49	8	A	—41	512	72	43	d	
	14		1.99	7	A	—37	578	67	50		
	16		1.50	3	A	—33	656	57	53		49
7– 6	13	M	2.50	5	A	—35	530	79	51	c	
	14		2.00	4	A	—40	593	66	50		
	15		1.50	3	A	—41	661	52	52		52
7– 7	13	M	2.50	6	A	—32	527	81	55	c	
	14		1.99	5	A	—35	590	69	56		
	15		1.50	3	A	—40	659	53	54		52
7– 8	14	M	2.20	21	A	—30	512	71	46	c	
	14		2.00	20	A	—28	541	69	52		49
7–10	15	M	1.61	5	A	—42	634	53	57	c	
	15		1.50	5	A	—43	649	50	48		53
7–11	13	M	2.50	20	A	—24	468	83	44	b	
	14		1.99	20	A	—25	535	71	45		
	15		1.50	20	A	—24	609	58	49		46
7–12	13	M	2.50	27	A	—21	458	82	43	b	
	14		2.00	28	A	—25	525	68	44		
	15		1.50	25	A	—27	597	54	43		
			Long method						43		
	15	T	2.20	35	8	—130	450	69	22	d	
	15		2.00	34	8	—131	479	64	32		
	16		1.80	33	8	—130	510	62	37		40
7–13	13	M	2.49	29	A	—31	461	73	51	b	
	14		2.00	28	A	—32	520	63	44		
	15		1.50	24	A	—27	593	55	42		
	15	T	2.50	46	8	—156	403	66	28	d	
	15		2.00	43	8	—153	471	59	34		
	16		1.50	43	8	—161	547	50	42		43
			Long method						38		
7–14	13	M	2.50	19	A	—29	474	79	45	b	
	14		2.00	19	A	—33	539	66	46		
	15		1.50	26	A	—22	593	57	46		
	15	T	2.50	20	A	—37	451	65	46	c	
	15		2.20	19	A	—40	488	59	38		
	15		2.00	18	A	—40	519	56	41		44
7–15	13	M	2.49	11	A	—37	503	74	45	b	
	14		2.00	11	A	—38	559	64	43		
	15		1.50	11	A	—36	627	53	43		
	15	T	2.50	42	C	—40	397	88	40	c	
	15		2.20	47	C	—40	437	83	40		
	15		2.00	45	C	—39	458	79	35		42
7–16	13	M	2.50	15	A	—27	486	82	51	b	
	14		2.00	15	A	—33	547	67	45		
	15		1.50	13	A	—32	626	54	50		49
1945—Continued											
7–17	13	M	2.49	16	A	—36	486	73	51	a	
	14		2.00	16	A	—37	548	63	50		
	15		1.50	16	A	—36	620	51	48		50
7–18	13	M	2.48	17	A	—38	491	72	53	b	
	14		2.00	16	A	—40	549	61	50		
	15		1.50	17	A	—39	619	50	46		50
7–19	13	M	2.49	16	A	—26	487	82	54	b	
	14		2.00	16	A	—32	548	67	50		
	15		1.49	13	A	—36	624	52	49		51
7–22	15	M	1.48	63	8	17	547	64	44	d	
	16		1.41	57	8	7	570	58	46		45
7–23	13	M	2.50	16	A	—26	483	82	48	c	
	14		2.00	16	A	—32	548	67	49		
	15		1.50	19	A	—30	609	54	49		49
7–24	13	M	2.49	24	A	—35	473	72	49	b	
	14		1.99	22	A	—36	535	62	44		
	15		1.50	22	A	—36	609	50	50		
			Long method						43		
	16	T	2.00	40	8	—131	471	66	28	d	
	17		1.50	51	8	—139	526	60	30		43
			Long method						10		
7–25	13	M	2.50	17	A	—35	485	74	47	b	
	14		2.00	16	A	—37	547	63	46		
	15		1.50	14	A	—41	622	50	44		46
7–26	13	M	2.50	15	A	—24	485	85	46	b	
	14		2.00	14	A	—28	552	72	51		
	15		1.50	13	A	—29	621	57	48		48
7–29	14	M	1.99	41	A	—2	494	80	47	d	
	14		1.80	43	A	0	520	76	49		
	15		1.50	42	A	0	566	66	52		49
8– 2	13	M	2.50	26	A	—25	464	79	55	c	
	14		1.99	24	A	—31	535	66	56		
	15		1.50	24	A	—33	604	51	51		54
8– 3	13	M	2.49	6	A	—43	526	70	49	b	
	14		2.00	6	A	—45	588	61	50		
	15		1.50	5	A	—46	655	49	52		50
8– 4	13	M	2.49	7	A	—37	519	77	51	b	
	14		1.99	6	A	—40	583	65	48		
	15		1.50	5	A	—43	649	50	48		49
8– 5	13	M	2.49	5	A	—37	533	78	51	b	
	14		2.00	3	A	—41	590	65	50		
	15		1.50	2	A	—41	661	51	47		49
8– 6	14	M	2.00	14	A	15	507	105	05	p	
	14		1.80	15	A	19	536	99	10		
	15		1.50	16	A	16	584	83	18		
8– 8	13	M	2.50	21	A	12	445	115	29	p	
	14		2.00	20	A	10	512	98	28		
	15		1.50	17	A	20	589	86	32		
	15	T	2.49	24	A	—26	438	75	38	c	
	15		2.21	23	A	—26	472	71	37		
	16		2.00	24	A	—26	499	67	35		36
8– 9	13	M	2.50	31	A	30	415	127	14	p	
	14		2.00	31	A	27	480	107	14		
	15		1.50	33	A	33	553	89	18		
8–10	13	M	2.50	27	A	—20	456	84	49	b	
	13		2.00	26	A	—21	522	72	48		
	14		1.50	24	A	—28	600	54	51		49
8–11	13	M	2.50	7	A	—37	519	76	47	a	
	13		2.00	7	A	—38	580	66	46		
	15		1.50	5	A	—39	649	53	48		48
			Long method						50		
8–12	13	M	2.00	13	A	—5	539	89	39	d	
	14		1.80	14	A	—7	569	82	44		
	15		1.51	12	A	—10	613	69	42		42
8–13	13	M	2.50	5	A	—35	525	79	51	b	
	14		2.00	5	A	—38	588	67	53		
	15		1.50	3	A	—36	652	55	47		
	17	T	1.50	13	A	—50	602	46	35	d	
	17		1.45	12	A	—51	610	45	31		
	17		1.40	12	A	—51	619	44	32		44
8–14	13	M	2.50	11	A	—36	499	75	41	d	
	15		1.50	12	A	—32	624	55	45		
	15	T	2.51	12	A	—45	478	63	48	b	
	15		2.20	10	A	—48	516	58	45		
	16		2.00	10	A	—48	541	54	48		46
8–15	15	T	2.49	16	A	—46	466	59	42	b	
	15		2.21	15	A	—47	505	55	46		
	16		2.00	14	A	—48	536	51	45		44

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
8–16	14	M	1.68	36	A	−4	541	71	40	c	
	15		1.50	36	A	−4	575	65	48		
	15		1.38	36	A	−2	591	62	39		42
8–18	14	M	1.80	26	A	−14	545	72	46	c	
	14		1.50	25	A	−11	593	64	47		46
8–19	13	M	2.48	45	A	10	405	102	19	c	
	13		2.00	44	A	13	468	91	21		
	14		1.50	43	A	21	514	78	23		21
8–21	13	M	2.50	24	A	6	434	109	22	c	
	13		2.00	20	A	−6	516	86	17		
	14		1.50	15	A	−16	606	64	25		21
8–22	15	M	1.39	9	A	−38	641	53	33	c	
	15		1.30	10	A	−35	654	50	34		
	16		1.24	8	A	−39	670	48	41		36
8–23	13	M	2.50	24	A	47	407	147	891	p	
	13		2.00	24	A	45	474	124	897		
	14		1.50	17	A	17	583	84	24		
8–24	14	M	1.50	35	A	30	551	86	19	p	
	15		1.38	33	A	27	574	79	21		
	15		1.28	32	A	19	594	71	24		
8–26	13	M	2.19	26	A	13	474	105	26	c	
	13		2.00	28	A	12	500	97	30		
	14		1.50	22	A	5	585	75	34		30
8–27	13	M	2.49	15	A	−12	474	96	30	c	
	13		2.00	14	A	−16	541	81	34		
	14		1.50	12	A	−19	618	63	39		34
			Long method						49		
9– 2	12	M	2.50	47	A	21	403	111	27	d	
	13		1.99	44	A	14	481	92	32		
	14		1.50	31	A	−4	573	66	39		33
9– 4	15	Ty	2.50	132		139	304	145	20	p	
	15		1.99	134		130	388	121	19		
	16		1.50	138		119	461	99	09		
9– 5	14	M	1.45	73	B	50	521	83	19	d	
	15		1.32	71	B	48	546	76	24		
	15		1.24	68	B	46	566	71	26		23
9– 6	12	M	2.50	41	A	14	421	107	44	c	
	13		2.00	38	A	8	493	89	44		
	14		1.50	34	A	1	573	69	47		45
9– 7	12	M	2.50	14	A	−24	481	86	44	c	
	13		2.00	10	A	−35	568	67	50		
	14		1.50	8	A	−35	637	54	46		47
9– 8	13	M	2.00	6	A	−32	579	71	49	b	
	13		1.80	6	A	−33	608	66	51		
	14		1.50	4	A	−34	654	57	55		52
9– 9	16	M	1.15	22	A	5	649	59	40	d	
	16		1.13	24	A	14	646	62	40		
	17		1.13	30	A	31	632	69	36		39
9–12	16	Ty	1.73	70		54	476	98	39	d	
	16		1.58	64		48	508	89	42		
	17		1.43	56		40	542	79	44		42
9–15	13	M	2.20	7	A	−12	541	92	46	d	
	13		2.00	7	A	−16	569	83	48		
	14		1.50	9	A	8	626	81	49		48
9–16	12	M	2.51	11	A	−15	488	95	37	c	
	13		1.99	12	A	−19	552	79	39		
	14		1.50	14	A	−15	616	66	42		39
			Long method						38		
9–17	12	M	2.50	15	A	−27	484	83	43	b	
	13		2.00	15	A	−24	547	74	49		
	14		1.50	15	A	−29	617	56	46		46
9–18	12	M	2.50	20	A	7	461	111	47	c	
	13		2.00	18	A	−13	539	81	49		
	14		1.50	17	A	−22	614	60	49		
	16	T	2.20	57	C	23	403	125	37	d	
	16		1.80	56	C	25	460	113	33		
	17		1.51	61	C	35	493	102	29		43
9–19	12	M	2.49	20	A	−19	466	87	38	b	
	13		2.00	20	A	−18	529	77	38		
	14		1.50	20	A	−23	602	61	44		
	16	T	1.80	55	C	22	448	111	28	d	
	17		1.50	60	C	47	492	116	31		
	17		1.41	62	C	67	512	122	35		38
9–20	12	M	2.49	16	A	−7	464	99	31	c	
	13		2.00	17	A	−6	527	87	36		
	14		1.50	19	A	−10	594	67	37		
	18	T	1.29	34	B	−89	595	64	45	c	
	18		1.26	33	B	−83	603	65	43		
	19		1.22	33	B	−83	611	64	45		40
9–21	12	M	2.51	35	A	−1	426	97	35	c	
	13		1.99	35	A	−7	496	80	35		
	14		1.50	35	A	−8	572	63	41		37
9–22	12	M	2.51	17	A	−30	477	79	44	b	
	13		2.00	17	A	−32	541	67	41		
	14		1.50	17	A	−34	616	53	46		
	15	Ty	2.49	50		26	417	91	52	d	
	15		2.17	53		29	451	83	51		
	16		1.99	58		33	473	83	55		46
9–23	12	M	2.50	11	A	−33	499	78	45	c	
	13		2.00	10	A	−37	562	66	45		
	16	T	2.49	35	8	−7	413	124	55	d	
	16		2.00	35	B	−18	472	105	51		
	17		1.50	35	B	−55	563	80	48		47
9–24	16	T	2.50	35	8	4	393	128	47	c	
	16		2.00	36	B	−9	463	109	44		
	17		1.50	37	B	−26	538	89	43		45
9–25	16	T	2.51	25	B	−84	433	90	48	d	
	16		2.00	29	8	−76	493	83	47		
	17		1.50	35	8	−69	541	76	34		
	15	Ty	2.25	61		31	434	82	49	d	
	16		2.07	63		33	456	79	48		45
9–26	12	M	1.60	41	A	19	540	81	37	d	
	13		1.50	43	A	18	555	76	38		
	14		1.34	42	A	16	590	69	45		
	15	Ty	2.51	37		30	420	113	35	d	
	15		2.21	36		28	461	101	35		
	16		2.01	36		28	489	95	38		38
9–28	13	M	1.80	12	A	−14	574	78	42	b	
	13		1.60	11	A	−15	606	69	40		
	14		1.46	11	A	−18	628	63	41		
	16	T	2.49	24	A	−1	432	106	56	d	
	16		2.00	26	B	−61	494	88	50		
	18		1.45	26	B	−80	570	69	46		46
9–29	14	M	1.22	8	A	−38	679	48	46	d	
	15		1.15	7	A	−46	694	45	47		
	15		1.10	6	A	−46	694	44	34		
	16	T	2.49	39	B	−77	414	96	49	c	
	16		2.00	37	B	−85	479	82	45		
	17		1.50	36	B	−107	555	65	50		45
			Long method						49		
9–30	16	T	2.49	39	B	−63	407	102	50	b	
	16		2.00	39	B	−69	472	88	46		
	17		1.50	39	B	−84	546	72	46		
	15	Ty	2.48	33		34	418	124	39	d	
	15		2.20	34		33	450	112	34		
	16		2.00	34		34	480	107	40		44
10– 1	16	T	2.49	43	B	−30	389	117	45	b	
	16		2.00	45	B	−35	456	102	49		
	17		1.50	45	8	−43	531	85	53		
	15	Ty	2.53	34		28	423	101	51	c	
	15		2.21	36		24	460	93	40		
	16		2.01	38		25	487	87	45		47
10– 4	12	M	2.21	29	A	12	473	104	42	b	
	12		1.99	30	A	14	499	98	39		
	13		1.50	28	A	5	578	73	43		41
10– 5	12	M	2.19	21	A	17	495	110	48	d	
	12		1.99	19	A	5	526	95	43		
	13		1.50	19	A	9	598	78	45		45
10– 6	12	M	2.50	14	A	−22	490	87	49	b	
	12		1.99	11	A	−29	560	71	45		
	13		1.50	10	A	−30	632	57	51		48
10– 7	12	M	2.50	14	A	1	477	109	41	b	
	12		1.99	14	A	2	542	95	46		
	13		1.50	15	A	12	604	82	41		43
			Long method						24		
10– 8	12	M	2.50	21	A	9	455	112	44	c	
	12		1.99	19	A	10	522	99	40		
	13		1.50	16	A	0	606	74	46		43
10– 9	12	M	2.49	20	A	28	460	130	54	c	
	12		2.00	19	A	19	526	106	51		
	13		1.44	21	A	31	603	88	49		
	17	T	2.00	22	A	−7	501	88	50	b	
	17		1.80	20	A	−10	530	81	46		
	17		1.67	21	A	−11	549	77	47		48
10–10	12	M	2.50	31	A	60	410	154	41	c	
	12		2.00	29	A	43	482	121	36		
	13		1.50	25	A	65	561	109	38		
	16	T	2.50	53	C	−32	394	96	60	c	
	16		2.20	52	C	−34	437	88	53		
	17		2.00	54	C	−37	462	82	50		46
10–11	12	M	2.49	21	A	18	449	121	38	c	
	12		2.00	22	A	18	514	104	41		40
10–12	12	M	2.51	20	A	43	441	145	42	c	
	12		2.00	19	A	32	516	116	40		
	13		1.50	19	A	22	596	86	44		
	16	T	2.49	66	C	36	341	146	32	d	
	17		2.00	69	C	29	410	124	32		
	18		1.50	65	C	3	500	94	32		39
10–13	12	M	2.50	21	A	33	449	134	46	b	
	12		2.00	19	A	20	523	107	46		
	13		1.79	19	A	24	551	102	44		45
10–14	12	M	2.50	16	A	2	474	108	47	b	
	12		2.00	16	A	−1	539	91	50		
	13		1.50	14	A	−5	614	71	48		48
10–15	12	M	2.50	17	A	−18	475	89	47	b	
	12		1.99	16	A	−19	543	77	49		
	13		1.50	15	A	−21	615	61	49		48
10–16	12	M	2.51	19	A	−6	461	100	43	d	
	12		1.99	17	A	−9	531	85	38		41
10–17	12	M	2.50	26	A	−20	457	84	39	c	
	12		2.00	26	A	−23	523	70	41		
	13		1.50	23	A	−24	599	57	44		40
			Long method						39		
10–18	12	M	2.20	39	A	77	438	153	24	d	
	12		2.00	40	A	82	464	145	23		
	13		1.50	49	B	110	525	136	29		
	16	T	2.50	71	C	92	325	187	46	d	
	16		2.20	72	C	84	367	167	43		
	17		2.01	70	C	78	396	154	36		34
10–19	16	T	2.49	51	C	−12	387	110	44	d	
	17		2.01	48	C	−18	453	93	41		
	15	Ty	2.51	49		30	404	99	47	c	
	16		2.21	48		33	445	97	48		
	16		2.00	51		35	470	93	48		45
10–20	12	M	2.51	73	8	137	323	222	17	d	
	12		1.99	70	B	125	410	175	24		
	13		1.50	67	B	118	496	135	29		
	16	T	2.50	46	C	−46	411	85	50	c	
	17		2.00	45	B	−110	477	75	53		
	18		1.50	35	B	−119	560	59	49		
			Long method						53		
	16	Ty	2.20	44		25	456	87	45	d	
	16		2.01	42		25	484	83	48		
	17		1.80	46		27	510	78	52		45
10–21	12	M	2.50	85	C	220	303	252	25	p	
	12		2.00	85	C	197	384	199	19		
	13		1.50	87	C	269	469	188	36		
	15	Ty	2.50	53		45	382	126	37	d	
	16		2.20	55		46	423	115	39		
	16		2.00	57		50	443	115	42		36
10–22	12	M	2.50	61	B	132	339	222	23	d	
	12		1.98	58	8	122	428	179	31		
	13		1.49	56	B	126	508	144	31		28
10–23	12	M	2.51	64	B	149	330	240	25	d	
	12		2.00	59	B	144	410	199	23		
	13		1.50	55	B	141	497	156	24		
	16	T	2.50	32	B	85	396	160	59	d	
	17		2.20	34	B	70	437	143	54		
	17		2.00	35	B	57	465	132	58		40
10–24	12	M	2.50	67	8	105	357	190	42	c	
	12		2.00	63	8	98	432	155	35		
	13		1.50	59	B	99	517	124	39		
	16	T	2.50	14	A	−29	473	81	56	b	
	17		2.00	14	A	−30	533	70	53		
	17		1.80	15	A	−30	555	65	51		
	15	Ty	2.52	12		0	483	80	35	c	
	16		2.21	15		3	514	74	43		
	16		2.00	16		3	532	69	39		45
10–25	12	M	2.50	74	8	117	341	200	34	d	
	12		1.99	76	8	115	420	165	38		
	13		1.50	73	B	110	502	128	39		
	17	T	2.20	24	A	−20	480	78	52	b	
	17		2.00	24	A	−21	505	73	51		
	17		1.80	24	A	−23	532	67	48		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
10–25	16	Ty	2.52	15		2	469	80	36	d	
	16		2.20	13		1	514	73	35		
	16		2.00	13		2	541	70	39		44
10–26	16	Ty	2.51	27		14	439	91	36	d	
	16		2.22	26		14	476	85	29		
	16		2.00	24		11	512	76	26		30
10–27	12	M	2.50	78	C	132	342	193	41	d	
	12		1.99	75	B	107	418	159	29		
	13		1.50	67	B	92	516	115	44		
	16	Ty	2.51	32		17	439	92	40	c	
	16		2.21	32		18	466	85	40		
	16		1.98	34		20	492	82	39		39
10–28	12	M	1.80	58	B	58	480	112	36	d	
	13		1.54	55	B	55	527	98	36		
	13		1.45	51	B	51	545	91	30		34
11– 1	16	T	2.50	40	B	—92	417	90	54	c	
	17		2.01	42	B	—101	478	77	54		
	18		1.52	32	B	—114	560	62	49		52
			Long method						76		
11– 2	16	T	2.50	87	D	11	381	80	56	d	
	17		2.20	91	D	12	416	75	48		
	17		2.00	88	D	10	442	70	48		
	16	Ty	2.51	18		4	471	80	50	c	
	16		2.21	20		5	500	74	45		
	16		2.01	21		6	524	69	43		48
11– 3	16	T	2.49	68	C	—52	389	84	48	c	
	17		2.20	69	C	—54	428	78	47		
	17		2.00	66	C	—54	459	73	47		
	16	Ty	2.52	31		11	439	81	41	b	
	16		2.22	30		11	479	75	38		
	16		2.02	30		11	504	70	40		43
11– 4	16	T	2.50	55	C	—46	399	87	52	c	
	17		2.20	53	C	—47	441	80	52		
	17		2.00	57	C	—48	463	76	50		51
11– 5	13	M	1.50	19	A	41	602	71	58	c	
	13		1.34	18	A	40	630	64	53		
	14		1.21	19	A	40	646	60	53		55
11– 6	12	M	2.50	39	A	25	422	119	44	c	
	12		1.99	36	A	14	499	95	44		
	13		1.50	30	A	4	579	72	41		
			Long method						46		
	16	Ty	2.53	45		19	420	82	54	c	
	16		2.23	42		18	466	76	55		
	16		2.02	37		15	498	70	53		48
11– 7	12	M	2.50	37	A	15	429	110	50	b	
	12		2.00	37	A	10	499	91	51		
	13		1.50	33	A	3	578	70	48		50
11– 8	12	M	2.51	32	A	2	439	102	52	b	
	12		2.00	33	A	0	507	86	53		
	13		1.50	32	A	0	579	69	47		
	16	Ty	2.21	18		6	504	78	46	c	
	17		2.02	18		5	533	74	47		
	17		1.82	19		6	560	67	42		49
11– 9	12	M	2.50	44	A	35	413	126	43	b	
	12		2.00	40	A	28	487	104	46		
	13		1.50	39	A	30	564	85	43		
	17	T	2.49	54	C	—53	409	80	53	c	
	17		2.20	53	C	—57	447	74	47		
	17		2.00	50	C	—56	476	70	57		46
11–11	12	M	2.51	85	C	211	317	247	47	d	
	12		2.00	86	C	201	398	201	44		
	13		1.50	79	C	191	490	153	42		44
11–12	12	M	1.73	38	A	59	516	114	24	d	
	13		1.50	38	A	60	554	102	29		
	13		1.34	34	A	52	583	90	29		27
11–13	12	M	2.50	35	A	38	423	133	42	c	
	12		1.99	33	A	30	497	109	44		
	13		1.50	30	A	24	576	84	44		
	16	T	2.50	59	C	—47	401	86	57	c	
	16		2.20	59	C	—53	441	77	54		
	17		2.00	59	C	—53	466	73	52		48
11–14	13	M	1.40	40	A	57	573	94	36	d	
	14		1.26	42	A	61	598	87	37		36
11–15	12	M	2.51	33	A	42	422	137	38	b	
	12		2.00	33	A	36	492	113	42		
	13		1.50	33	A	34	570	90	39		
			Long method						39		
1945—Continued											
11–15	17	T	2.50	33	B	—80	432	92	65	c	
	17		2.19	31	B	—85	474	84	61		
	18		2.00	28	B	—87	498	79	53		44
11–16	12	M	2.51	25	A	12	448	114	51	c	
	12		2.00	22	A	5	522	94	52		
	13		1.50	21	A	0	597	72	49		
	16	Ty	2.21	26		14	486	84	50	d	
	17		2.01	22		12	512	79	47		49
11–17	17	Ty	2.11	22		7	510	73	43	c	
	17		1.99	22		7	526	70	40		
	17		1.93	21		6	537	68	47		43
11–18	12	M	2.00	29	A	17	504	101	43	c	
	12		1.79	25	A	12	540	91	47		
	13		1.50	24	A	8	588	77	47		
	17	T	2.50	18	A	—20	457	87	57	c	
	17		2.20	19	A	—20	492	80	55		
	18		2.00	19	A	—20	516	76	52		
	16	Ty	2.41	43		23	437	88	53	c	
	17		2.23	43		23	460	84	54		
	17		2.02	50		25	480	75	54		51
11–19	13	M	1.43	51	B	84	541	111	36	c	
	14		1.24	47	B	68	589	90	37		
	14		1.14	51	B	74	605	85	44		39
11–20	12	M	2.50	33	A	34	426	131	42	c	
	12		2.00	31	A	28	497	108	44		
	13		1.50	26	A	18	577	82	41		
	17	T	2.52	30	B	—99	429	84	47	b	
	17		2.20	30	B	—110	472	75	50		
	18		2.00	29	B	—112	499	70	50		46
11–21	12	M	2.50	24	A	3	449	106	45	b	
	12		2.00	25	A	5	513	93	44		
	13		1.50	22	A	—3	595	70	49		
	17	Ty	2.21	19		15	496	94	44	c	
	17		2.12	19		16	507	94	44		
	17		1.97	18		14	532	85	48		46
11–22	12	M	2.00	36	A	35	491	111	41	c	
	13		1.50	32	A	29	569	87	42		
	17	T	2.50	56	C	—53	408	82	58	c	
	17		2.36	57	C	—53	424	79	56		
	17		2.20	56	C	—58	447	74	56		
	17	Ty	2.50	34		12	440	80	55	c	
	18		2.23	34		12	479	73	52		
	18		2.03	33		12	506	60	51		51
11–23	12	M	2.50	49	B	95	391	189	56	d	
	12		2.00	48	B	115	452	177	49		
	13		1.50	55	B	141	521	166	54		53
11–24	12	M	2.00	76	B	152	410	199	52	d	
	12		1.79	73	B	142	450	175	55		
	13		1.50	76	B	141	502	149	54		54
11–25	12	M	2.00	50	B	20	482	90	46	d	
	12		1.79	49	B	31	504	94	40		
	13		1.50	56	B	30	542	77	42		43
11–26	12	M	2.00	75	B	56	443	113	43	c	
	12		1.80	70	B	46	480	97	41		
	13		1.50	70	B	39	531	78	40		
	17	Ty	2.19	19		7	500	79	42	p	
	17		2.02	20		12	521	81	47		
	17		1.93	19		7	538	73	57		44
11–27	12	M	2.50	46	A	30	408	120	35	c	
	12		2.00	43	A	27	478	102	38		
	13		1.50	41	A	25	558	81	41		
	17	T	2.50	31	B	—113	437	78	51	c	
	18		2.20	34	B	—123	469	71	47		
	18		2.00	34	B	—123	491	67	45		
	16	Ty	2.53	39		15	424	80	49	c	
	17		2.24	42		19	460	79	55		
	17		2.02	41		23	486	80	48		46
11–28	12	M	2.51	24	A	—10	461	94	50	b	
	12		2.00	23	A	—13	528	79	47		
	13		1.50	23	A	0	595	71	46		
			Long method						38		
	16	Ty	2.53	27		7	454	76	53	b	
	17		2.02	27		7	512	69	47		
	18		1.71	31		13	551	66	50		49
			Long method						63		
11–29	12	M	2.51	25	A	25	445	125	53	d	
	13		1.50	21	A	8	597	77	49		
1945—Continued											
11–29	16	Ty	2.53	32		14	439	86	55	c	
	17		2.22	33		15	475	78	52		
	17		2.02	35		16	504	74	57		53
11–30	12	M	2.51	23	A	11	453	113	51	b	
	12		2.00	20	A	2	527	92	48		
	13		1.50	19	A	1	599	74	49		49
12– 1	12	M	2.50	23	A	30	442	130	43	b	
	12		2.00	20	A	19	519	105	44		
	13		1.50	19	A	10	599	79	47		45
12– 4	13	M	1.50	38	A	77	551	112	31	c	
	13		1.34	39	A	74	580	100	32		
	14		1.23	37	A	75	601	93	31		31
12– 5	13	M	1.50	47	B	47	542	93	34	d	
	13		1.42	47	B	48	557	89	34		
	14		1.27	46	B	49	587	81	38		35
12– 6	13	M	1.50	61	B	172	502	176	49	d	
	13		1.33	60	B	172	534	159	48		
	14		1.21	62	B	173	559	148	50		
	20	T	1.83	38	B	—124	507	65	42	c	
	20		1.84	38	B	—124	507	65	44		
	20		1.85	38	B	—127	507	65	46		
	16	Ty	2.51	19		10	463	91	46	c	
	17		2.22	20		14	488	91	43		
	17		2.00	19		14	522	85	49		46
12– 7	12	M	2.20	51	B	160	402	233	53	d	
	12		2.00	50	B	161	430	218	47		
	17	Ty	2.22	26		10	489	75	48	c	
	17		2.02	27		11	515	72	50		
	18		1.83	29		12	541	68	56		50
12– 8	18	T	2.00	27	B	—95	502	76	56	c	
	19		1.92	26	B	—97	512	73	54		
	20		1.84	23	A	—21	528	70	52		54
12– 9	12	M	2.50	41	A	57	407	146	36	d	
	12		2.00	39	A	49	482	121	36		
	13		1.50	34	A	34	566	89	38		42
			Long method						52		
12–10	12	M	2.50	45	A	101	386	188	29	d	
	12		2.00	44	A	104	460	161	31		
	13		1.50	40	A	96	545	123	33		31
12–11	12	M	2.51	57	B	103	372	193	46	d	
	12		1.99	48	B	99	451	162	36		
	13		1.50	49	B	96	535	126	39		40
12–12	12	M	2.52	35	A	47	416	141	43	c	
	12		2.00	34	A	47	488	121	38		
	13		1.50	37	A	46	561	95	35		39
12–13	12	M	2.51	36	A	57	411	150	39	c	
	12		2.01	35	A	56	481	128	34		
	13		1.50	35	A	64	558	106	36		36
12–14	12	M	2.51	33	A	19	432	116	48	b	
	12		1.99	32	A	14	503	97	47		
	13		1.50	32	A	13	578	77	48		48
12–15	12	M	2.50	26	A	18	444	119	48	c	
	12		2.00	25	A	16	516	101	55		
	13		1.50	21	A	8	594	77	50		
	17	T	2.50	54	C	—40	397	90	56	c	
	18		2.20	50	C	—46	442	80	54		
	19		2.00	51	C	—45	465	77	52		52
12–16	13	M	1.34	29	A	16	605	73	43	d	
	14		1.22	30	A	23	622	70	41		
	14		1.13	27	A	24	642	66	42		
	18	T	2.20	44	B	—116	451	77	54	c	
	18		2.10	45	B	—113	466	76	58		
	19		2.00	53	C	—51	468	73	54		51
12–17	12	M	1.81	48	B	68	487	124	35	d	
	13		1.71	46	B	63	504	115	31		
	13		1.50	44	B	65	540	106	33		
	17	Ty	2.53	23		5	457	79	51	c	
	17		2.22	22		6	498	74	47		
	18		2.02	22		6	525	69	45		43
12–20	17	Ty	2.53	27		9	451	82	55	c	
	17		2.22	26		10	492	76	55		
	18		2.02	27		12	518	73	58		56
12–22	13	M	1.60	129	C	142	444	147	38	d	
	13		1.50	125	C	141	464	139	39		
	13		1.41	122	C	144	485	132	39		39
12–23	12	M	2.50	102	C	89	333	170	38	d	
	12		1.99	106	C	95	404	147	39		
	12		1.80	110	C	99	430	139	39		39

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1945—Continued											
12–25	18	T	2.05	36	B	−84	478	83	54	c	
	19		2.00	37	B	−88	487	81	55		
	19		1.96	40	B	−92	490	79	57		
	17	Ty	2.52	28		13	446	88	51	c	
	17		2.21	28		13	486	80	55		
	18		2.01	29		14	516	78	59		55
12–26	14	M	1.33	110	C	306	473	191	37	d	
	14		1.20	128	C	301	501	175	44		
	14		1.17	124	C	311	504	179	39		40
12–27	12	M	2.20	100	C	120	364	173	34	d	
	12		2.00	100	C	109	398	154	32		
	13		1.50	93	C	102	488	116	34		33
12–28	12	M	2.49	37	A	19	417	113	30	d	
	12		2.00	39	A	16	486	95	39		
	13		1.50	29	A	3	579	72	45		38
12–29	12	M	2.50	72	B	79	366	156	46	c	
	12		2.00	69	B	75	439	131	41		
	13		1.50	67	B	73	522	103	41		45
			Long method						52		
12–30	12	M	2.20	50	B	68	426	143	32	b	
	12		2.00	47	B	65	456	132	30		
	13		1.50	47	B	62	539	103	33		
	18	T	2.50	34	B	−98	439	85	53	c	
	18		2.20	34	B	−103	467	78	50		
	19		2.00	33	B	−106	490	73	46		40
12–31	12	M	2.50	72	B	120	346	203	45	b	
	12		2.00	70	B	117	423	169	49		
	13		1.50	67	B	110	512	129	48		
	17	Ty	2.51	28		10	452	85	47	d	
	17		2.21	24		9	498	77	55		
	18		2.01	24		10	532	73	66		49
1946											
1– 1	12	M	2.21	97	C	218	342	232	31	d	
	12		2.00	96	C	220	380	215	36		
	13		1.50	90	C	212	475	165	38		35
1– 2	12	M	2.20	61	B	64	420	135	48	c	
	12		1.99	62	B	67	450	128	41		
	13		1.79	61	B	69	480	118	40		
	19	T	1.87	63	C	−26	467	87	46	c	
	20		1.86	61	C	−32	474	83	54		
	20		1.85	58	C	−33	477	82	52		47
1– 3	12	M	2.50	44	A	96	389	184	31	d	
	12		2.00	43	A	90	465	150	30		
	13		1.50	41	A	80	549	112	33		31
1– 4	12	M	2.51	55	B	95	375	185	47	c	
	12		2.00	51	B	84	454	148	46		
	13		1.50	48	B	74	541	110	44		46
1– 5	12	M	2.50	58	B	125	361	216	50	d	
	12		1.99	55	B	112	443	173	44		
	13		1.50	40	A	88	547	118	33		42
1– 6	12	M	2.51	44	A	70	398	159	30	d	
	13		2.00	43	A	68	472	133	32		
	13		1.50	38	A	60	553	102	30		
			Long method						31		
	18	T	2.51	18	A	5	448	117	64	d	
	18		2.20	17	A	4	493	108	68		
	19		2.00	17	A	11	507	110	58		47
1– 7	12	M	2.50	55	B	73	384	160	45	c	
	12		1.99	57	B	75	451	137	38		
	13		1.50	55	B	77	534	110	46		
	18	T	2.50	64	C	−50	396	85	52	c	
	18		2.20	56	C	−51	442	78	54		
	19		2.00	62	C	−52	464	74	53		48
			Long method						41		
1– 8	13	M	1.42	41	A	51	567	92	32	d	
	14		1.37	40	A	53	580	90	39		
	14		1.27	42	A	60	591	87	35		
	20	T	1.83	14	A	−7	537	89	43	d	
	20		1.82	15	A	4	535	99	49		
	20		1.82	12	A	−14	547	84	48		41
1– 9	14	M	1.23	49	A	66	591	86	38	p	
	15		1.12	41	A	70	613	81	28		
	15		1.07	32	A	46	637	71	11		
	17	T	2.50	11	A	−16	466	93	50	c	
	18		2.20	10	A	−16	504	91	51		
	19		2.00	10	A	−21	535	82	49		46
1–10	15	M	1.10	48	B	78	606	84	34	p	
	16		1.03	47	B	71	625	76	34		
1946—Continued											
1–12	12	M	2.00	90	C	169	395	185	38	d	
	13		1.80	85	C	148	440	158	47		
	13		1.49	79	C	149	502	134	48		
	19	T	1.88	12	A	−10	536	90	49	c	
	19		1.84	12	A	−7	545	91	50		
	19		1.81	12	A	−8	548	89	48		47
1–13	16	M	1.04	34	A	39	645	65	36	d	
	16		1.01	37	A	47	646	66	35		
	17		1.00	43	A	64	638	70	29		
	17	T	2.50	27	A	−92	437	86	54	b	
	18		2.20	26	B	−100	475	78	50		
	18		2.00	25	B	−101	503	74	53		46
1–14	13	M	1.61	64	B	86	496	121	38	d	
	13		1.50	60	B	85	517	114	36		
	14		1.34	64	B	86	548	103	44		
	17	T	2.50	16	A	−23	465	85	56	b	
	18		2.20	14	A	−26	503	78	56		
	18		2.00	14	A	−27	530	73	52		49
1–17	12	M	2.51	109	C	131	317	200	43	d	
	12		1.99	104	C	129	398	165	39		
	13		1.50	94	C	119	492	124	43		42
1–18	12	M	2.50	64	B	64	381	145	46	d	
	13		1.61	58	B	56	518	100	44		
	13		1.50	59	B	58	534	96	46		
	18	T	2.07	31	B	−68	476	88	41	c	
	18		1.94	27	B	−75	496	83	41		
	19		1.80	30	B	−68	513	81	44		43
1–19	16	M	1.04	68	B	123	583	99	32	d	
	16		1.02	61	B	108	601	92	36		
	16		1.01	65	B	99	608	85	42		37
1–20	15	M	1.01	54	B	70	622	73	39	p	
	15		1.02	61	B	73	621	73	46		
	16		1.03	58	B	68	624	72	50		
	17	T	2.50	36	B	92	381	166	55	d	
	18		2.20	33	B	88	432	149	57		
	18		2.00	32	B	108	453	149	50		48
1–21	19	T	1.73	35	B	−55	516	85	49	d	
	20		1.72	37	B	−65	517	81	47		
	20		1.71	40	B	−64	517	82	51		49
1–22	19	T	1.83	64	C	−42	477	77	44	c	
	19		1.80	66	C	−43	478	76	47		
	19		1.77	64	C	−45	482	74	48		46
1–23	12	M	2.51	46	A	36	412	124	47	d	
	12		2.00	44	A	30	487	104	48		
	13		1.50	41	A	29	562	83	44		
			Long method						50		
	17	T	2.50	54	C	−45	383	86	55	b	
	18		2.20	53	C	−48	441	79	54		
	18		2.00	55	C	−47	464	76	52		51
1–24	14	M	1.39	60	B	138	530	143	49	d	
	14		1.25	53	B	125	564	123	39		
	15		1.15	65	B	147	568	125	46		
	17	T	2.50	52	C	−47	405	85	53	b	
	18		2.20	51	C	−50	444	78	51		
	18		2.00	48	C	−49	471	74	50		50
1–25	14	M	1.20	65	B	150	559	132	51	d	
	15		1.13	74	B	145	573	120	52		
	15		1.07	63	B	128	597	106	56		
	17	T	2.50	30	B	−93	431	87	49	b	
	18		2.20	31	B	−96	465	80	44		
	18		2.00	33	B	−100	490	75	45		48
			Long method						35		
1–26	12	M	2.20	78	C	64	417	133	62	d	
	12		2.00	74	B	67	447	123	55		
	13		1.50	69	B	64	533	97	57		
	17	T	2.50	46	B	7	392	132	68	d	
	18		2.20	42	B	−31	442	107	58		
	18		2.00	42	B	−36	469	100	56		59
1–27	13	M	1.50	132	C	146	462	142	38	d	
	14		1.34	131	C	140	495	127	44		
	14		1.29	131	C	145	505	124	43		
	17	T	2.50	27	A	−11	430	90	52	b	
	18		2.20	24	A	−18	478	80	54		
	18		2.00	24	A	−19	503	75	51		49
1–28	14	M	2.50	131	C	248	283	281	59	d	
	15		2.00	134	C	240	363	233	58		
	15		1.49	120	C	219	458	172	44		
	17	T	2.50	28	B	−76	428	94	54	d	
	17		2.37	29	B	−76	447	90	51		53
1946—Continued											
1–29	17	T	2.50	8	A	107	431	260	63	p	
	18		2.20	9	A	113	465	238	68		
	18		2.00	9	A	80	505	187	63		
1–30	18	T	2.00	6	A	39	523	147	42	c	
	19		1.80	7	A	34	557	134	43		
	19		1.74	6	A	33	566	132	47		44
1–31	12	M	2.51	60	B	71	376	155	44	d	
	13		2.00	62	B	69	447	129	44		
	17	T	2.50	8	A	125	415	283	63	d	
	18		2.20	8	A	121	460	248	59		
	18		2.00	8	A	104	491	213	47		50
2– 1	12	M	2.50	92	C	119	336	188	44	d	
	13		2.00	91	C	113	412	154	42		
	13		1.50	91	C	116	495	123	47		44
2– 2	13	M	1.50	152	C	156	438	150	28	p	
	14		1.33	148	C	155	478	134	33		
	14		1.29	148	C	159	481	132	26		
2– 5	14	M	1.40	161	C	148	464	140	41	d	
	14		1.26	154	C	149	494	132	41		
	15		1.16	154	C	156	517	120	45		42
2– 6	13	M	1.79	152	C	147	394	169	38	d	
	14		1.50	145	C	140	449	141	36		
	14		1.41	146	C	130	472	130	41		38
2– 7	14	M	1.50	196	C	156	421	159	41	d	
	14		1.33	189	C	151	458	140	36		
	14		1.21	185	C	153	482	129	30		
	17	T	2.20	10	A	74	463	192	43	d	
	18		2.00	10	A	86	488	192	41		
	18		1.80	9	A	161	492	248	43		39
2– 8	17	T	2.49	11	A	136	380	293	33	d	
	18		2.00	12	A	124	464	230	47		
	18		1.80	12	A	102	505	192	51		44
2– 9	17	T	2.50	20	A	173	349	332	58	p	
	17		2.20	19	A	178	396	303	61		
	18		2.00	19	A	166	434	268	60		
2–10	17	T	2.50	4	A	4	484	128	45	c	
	17		2.20	5	A	2	518	116	42		
	18		2.00	5	A	−3	545	105	42		43
2–12	17	T	2.50	9	A	46	440	174	44	c	
	17		2.20	9	A	38	479	152	41		
	18		2.00	10	A	33	512	138	46		44
2–14	17	T	2.50	17	A	47	411	168	40	c	
	17		2.20	16	A	43	457	152	43		
	18		2.00	16	A	41	480	142	38		44
			Long method						27		
2–15	14	M	1.28	127	C	170	501	133	40	d	
	15		1.18	126	C	171	524	124	39		
	15		1.14	131	C	174	528	122	39		
	17	T	2.50	14	A	28	421	147	33	c	
	17		2.20	14	A	27	464	135	36		
	17		2.00	15	A	27	489	128	33		36
2–16	14	M	1.50	125	C	256	442	189	36	d	
	14		1.34	127	C	249	475	170	32		
	14		1.27	121	C	243	493	160	31		33
2–17	17	T	2.50	17	A	8	433	120	39	b	
	17		2.20	17	A	4	474	108	40		
	18		1.80	18	A	1	529	93	42		40
2–18	17	T	2.50	28	B	53	389	144	29	c	
	17		2.20	27	B	27	433	129	35		
	17		2.00	26	B	26	463	119	30		31
2–20	15	M	1.16	139	C	103	525	98	32	d	
	15		1.09	147	C	104	535	94	34		
	16		1.06	137	C	96	552	87	42		36
2–21	16	M	1.08	121	C	81	553	83	32	p	
	16		1.06	121	C	81	556	81	29		
	18	T	1.87	39	C	55	450	131	33	d	
	18		1.80	46	C	49	453	127	28		
	19		1.50	61	C	7	500	96	30		31
2–22	15	M	1.16	134	C	282	483	164	06	p	
	17		1.04	121	C	330	504	166	01		
	18		1.06	120	C	309	505	161	05		
	17	T	2.50	66	C	−36	378	95	42	c	
	17		2.20	66	C	−40	419	86	39		
	17		2.00	65	C	−45	449	79	42		41
2–23	16	M	1.05	99	C	234	544	127	26	p	
	16		1.05	101	C	227	545	129	24		
	16		1.04	117	C	216	542	132	27		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1946—Continued											
2–23	17	T	2.51	33	B	—33	401	113	34	d	
	17		2.00	35	B	—35	466	99	36		
	19		1.50	44	8	—18	519	94	32		34
			Long method						21		
2–24	14	M	1.30	103	C	85	519	98	31	d	
	15		1.19	103	C	92	540	92	36		
	15		1.12	101	C	101	556	90	36		
	17	T	2.50	17	A	—1	438	111	39	b	
	17		2.20	18	A	—3	474	99	39		
	17		2.00	19	A	—5	498	92	36		38
2–25	12	M	2.50	92	C	69	353	152	40	c	
	13		1.99	85	C	63	433	125	43		
	14		1.50	80	C	58	511	97	37		
			Long method						39		
	21	T	1.99	52	C	39	436	128	51	d	
	21		2.20	49	C	40	412	135	49		
	22		2.49	44	C	18	381	129	43		42
2–26	12	M	2.49	77	C	64	368	145	45	c	
	13		1.99	76	C	60	436	121	50		
	14		1.50	79	C	59	516	97	53		
	16	T	2.50	30	8	27	397	135	44	c	
	17		2.20	28	8	17	440	122	36		
	17		2.00	28	8	14	469	115	38		44
2–27	12	M	2.50	72	B	65	371	141	43	c	
	13		2.00	69	8	61	442	119	39		
	14		1.50	69	8	60	521	94	36		
	16	T	2.50	68	D	17	378	98	46	d	
	17		2.20	77	D	18	415	88	50		
	17		2.00	82	D	16	438	80	48		42
2–28	14	M	1.37	77	C	57	531	88	33	d	
	14		1.24	86	C	81	542	90	30		
	15		1.16	83	C	83	561	84	31		
	18	T	1.77	29	D	—12	510	99	52	c	
	18		1.64	33	D	—36	529	88	45		
	18		1.50	38	D	—57	545	80	45		42
3– 1	13	M	2.20	90	C	31	399	116	31	d	
	13		2.00	88	C	30	428	107	26		
	14		1.50	78	C	29	515	84	29		29
3– 2	12	M	2.50	45	A	1	424	93	45	c	
	13		1.99	38	A	—9	501	76	48		
	14		1.50	36	A	—10	573	62	42		45
3– 3	13	M	2.00	44	A	27	479	102	39	d	
	13		1.79	43	A	24	510	93	40		
	14		1.50	44	A	30	554	83	33		
	16	T	2.50	7	A	36	439	163	31	c	
	17		2.20	8	A	23	489	136	39		
	17		2.00	8	A	32	503	139	35		36
3– 4	13	M	1.99	110	C	162	388	185	44	d	
	13		1.80	112	C	164	419	172	44		
	14		1.50	104	C	163	474	146	39		42
3– 5	16	T	2.49	38	B	83	378	162	57	p	
	17		2.20	37	B	83	422	149	58		
	17		2.00	34	8	96	458	145	61		
3– 6	13	M	2.01	147	C	199	349	214	38	d	
	13		1.80	146	C	189	389	190	45		
	14		1.50	139	C	209	441	171	36		40
3– 7	17	T	2.10	54	C	24	413	122	29	d	
	17		1.80	56	C	11	464	106	39		
	18		1.50	57	C	15	504	100	35		34
3– 8	12	M	2.49	109	C	177	283	229	01	p	
	13		2.00	106	C	180	360	195	05		
	14		1.50	101	C	177	455	152	13		
	16	T	2.51	47	C	2	372	120	20	c	
	17		2.00	46	C	6	442	107	36		
	18		1.50	47	C	11	520	96	37		34
			Long method						44		
3– 9	12	M	2.51	96	C	96	334	173	31	d	
	13		2.00	90	C	88	413	140	27		
	14		1.50	89	C	92	497	111	40		
			Long method						40		
	16	T	2.49	24	A	4	413	112	27	c	
	17		2.00	25	A	6	477	99	34		
	18		1.50	34	A	10	540	84	37		35
3–10	12	M	2.50	106	C	68	340	156	42	c	
	13		2.00	106	C	63	413	130	42		
	14		1.50	101	C	67	497	104	38		41
3–11	12	M	2.49	88	C	43	358	133	31	d	
	13		2.00	91	C	44	423	116	31		31
3–12	15	M	1.25	63	B	43	571	72	34	d	
	15		1.17	58	B	38	591	66	35		34
3–13	16	M	1.07	33	A	6	644	54	43	p	
	16		1.06	33	A	6	648	53	43		
	17		1.06	25	A	—15	656	49	36		
3–14	12	M	2.50	39	A	12	420	107	37	c	
	13		1.99	37	A	7	489	89	37		
	13		1.80	36	A	4	523	81	42		
	18	T	1.41	15	A	32	575	112	33	d	
	18		1.39	15	A	29	577	109	31		
	18		1.36	16	A	29	583	108	34		36
3–15	12	M	2.51	60	8	53	383	135	44	c	
	13		2.00	55	B	46	459	112	40		
	14		1.50	54	8	43	539	87	40		41
3–16	13	M	2.21	61	B	55	415	126	33	c	
	13		2.00	60	8	52	449	115	33		
	14		1.50	61	8	54	527	93	36		34
3–18	18	T	1.42	52	C	116	497	142	34	d	
	18		1.39	51	C	127	502	144	38		
	18		1.34	55	C	119	513	138	42		38
3–19	17	M	1.08	110	C	69	564	78	31	d	
	17		1.08	110	C	69	566	78	35		
	17		1.08	115	C	68	565	78	33		33
3–20	14	M	1.31	75	C	—1	557	62	35	d	
	15		1.27	74	C	6	566	64	37		
	15		1.24	76	C	0	575	61	39		37
3–21	17	M	1.08	104	C	102	558	87	30	d	
	17		1.09	97	C	104	556	88	25		
	17		1.09	101	C	106	554	89	27		27
3–22	15	M	1.16	86	C	81	553	84	22	p	
	16		1.11	78	C	51	577	71	28		
	16		1.09	74	C	45	591	67	34		
	16	T	2.52	32	B	278	330	250	25	d	
	16		2.00	30	B	304	409	219	21		
	17		1.50	31	8	223	507	156	26		26
3–23	15	M	1.23	71	B	47	571	71	33	d	
	15		1.16	71	B	50	583	69	35		34
3–24	16	M	1.11	43	A	16	624	57	36	p	
	17		1.09	48	B	23	624	56	43		
	17		1.09	45	A	15	623	55	36		
3–25	17	M	1.10	36	A	15	634	58	41	d	
	17		1.10	33	A	6	637	55	42		
	17		1.11	36	A	14	632	58	40		
	19	T	1.22	24	A	161	562	174	51	d	
	19		1.20	22	A	153	570	168	47		
	19		1.20	27	A	156	570	168	58		46
3–26	16	T	2.51	19	A	67	393	192	30	d	
	16		2.00	19	A	61	470	160	36		
	17		1.50	19	A	52	546	130	36		45
			Long method						56		
3–30	13	M	2.20	40	A	—16	477	74	55	c	
	13		2.00	39	A	—18	504	69	53		
	14		1.50	36	A	—20	583	55	59		56
3–31	13	M	2.21	32	A	—6	480	87	53	c	
	13		2.00	30	A	—9	512	80	53		
	14		1.50	27	A	—12	588	63	48		51
4– 1	12	M	2.50	11	A	—42	503	69	50	b	
	13		2.00	9	A	—49	583	57	46		
	14		1.50	9	A	—47	636	47	46		47
4– 2	12	M	2.51	16	A	—17	472	91	41	b	
	13		2.00	16	A	—18	538	78	41		
	14		1.50	12	A	—28	623	58	43		42
			Long method						30		
4– 3	13	M	2.50	18	A	—16	470	91	44	b	
	13		2.00	18	A	—20	540	76	49		
	14		1.50	15	A	—24	615	59	49		47
4– 4	13	M	2.50	22	A	—11	462	94	49	b	
	13		2.00	21	A	—14	529	79	48		
	14		1.50	19	A	—16	607	63	52		50
4– 5	13	M	2.51	19	A	—23	471	85	45	b	
	13		2.01	18	A	—25	536	72	48		
	14		1.50	18	A	—25	609	58	48		
	16	T	2.50	13	A	20	437	137	42	c	
	16		2.00	10	A	17	505	121	36		
	17		1.50	7	A	1	600	93	36		40
4– 6	13	M	2.50	23	A	—20	464	85	51	b	
	13		2.00	24	A	—23	529	72	53		
	14		1.50	23	A	—22	600	58	50		51
4– 7	13	M	2.49	28	A	—11	454	91	51	b	
	13		2.00	29	A	—14	520	77	53		
	14		1.50	28	A	—15	591	61	51		52
4– 8	13	M	2.51	60	B	45	397	125	52	c	
	13		1.99	64	B	46	464	108	61		
	14		1.50	74	8	54	530	89	50		
	15	T	2.52	20	A	162	357	320	60	d	
	16		2.00	20	A	138	444	239	62		
	17		1.50	21	A	135	527	187	59		55
4– 9	13	M	2.50	26	A	—27	462	77	51	d	
	13		2.00	27	A	—29	527	66	55		53
4–11	15	T	2.50	15	A	126	390	276	61	d	
	16		2.00	14	A	124	467	228	64		
	17		1.50	17	A	102	547	165	57		60
4–12	14	M	1.57	18	A	—24	598	60	45	d	
	14		1.47	17	A	—23	614	58	45		
	14		1.42	18	A	—24	620	56	43		44
4–15	15	T	2.50	53	C	150	312	231	36	d	
	16		2.00	54	C	155	390	198	46		
	17		1.50	53	C	164	475	165	48		43
4–16	13	M	2.49	39	A	—4	434	92	54	d	
	13		2.00	36	A	—11	505	76	52		
	14		1.50	32	A	—16	581	59	47		48
		T	Long method						47		
4–17	13	M	2.50	30	A	—18	453	84	51	c	
	13		2.00	27	A	—22	522	71	48		
	14		1.50	25	A	—24	597	56	49		49
4–18	15	T	2.51	35	8	133	358	182	28	d	
	16		2.00	40	B	124	422	157	27		
	17		1.50	55	B	164	478	148	17		24
4–19	17	T	1.50	126	D	107	439	140	42	d	
	17		1.41	122	D	97	465	125	38		
	17		1.34	110	D	69	496	107	37		39
4–20	13	M	2.49	45	B	4	430	90	42	d	
	13		2.21	47	B	3	460	81	39		
	13		2.00	47	8	2	489	75	47		
	15	T	2.50	15	A	39	439	159	66	d	
	16		2.00	14	A	32	503	134	57		
	17		1.50	18	A	35	569	116	52		48
4–21	16	T	1.80	11	A	47	541	144	54	c	
	16		1.70	11	A	46	548	139	49		
	17		1.50	12	A	47	577	130	52		52
4–22	13	M	2.50	46	B	15	419	101	36	d	
	13		2.20	46	B	13	451	93	31		34
4–25	15	M	1.45	105	C	10	511	78	42	d	
	15		1.39	105	C	10	523	75	44		
	15		1.35	102	C	5	532	71	42		43
4–26	13	M	2.20	55	B	7	456	81	51	c	
	13		2.00	58	B	8	479	76	50		
	14		1.50	63	8	15	547	63	49		50
4–27	15	T	2.51	62	C	207	282	278	36	d	
	16		2.00	62	C	209	368	232	45		
	17		1.50	64	C	194	460	179	50		44
4–28	15	M	1.32	68	B	23	569	61	44	p	
	16		1.26	72	B	19	585	56	54		
4–29	13	M	2.51	71	8	1	396	85	37	d	
	13		2.00	67	B	5	465	69	38		38
5– 1	13	M	2.49	20	A	—37	479	70	60	c	
	13		2.21	19	A	—40	516	64	54		
	13		2.00	19	A	—41	542	60	56		57
5– 2	13	M	2.49	41	A	1	429	93	64	d	
	13		2.00	39	A	0	496	83	57		
	15		1.50	37	A	15	564	76	51		57
5– 4	14	M	1.66	39	A	—12	549	64	52	c	
	15		1.50	39	A	—5	568	63	52		
	15		1.36	41	A	—7	592	57	54		
	18	T	1.22	49	C	91	555	121	49	d	
	18		1.19	46	C	94	559	121	46		
	18		1.17	52	C	123	551	128	43		50
5– 9	13	M	2.19	26	A	—29	505	70	60	c	
	13		2.00	23	A	—32	530	65	54		
	15		1.50	19	A	—34	608	52	54		
	16	T	1.50	32	B	127	534	133	59	d	
	17		1.43	35	8	147	537	135	53		
	17		1.37	31	8	130	555	128	50		55
5–10	13	M	2.20	29	A	—15	487	81	56	d	
	13		2.00	19	A	—26	534	71	53		54
5–11	13	M	2.00	13	A	—37	553	65	50	d	
	15		1.49	11	A	—37	624	52	43		46

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1946—Continued										
5–12	13	M	2.20	17	A —34	520	70	50	b	
	14		2.00	16	A —35	545	65	51		
	15		1.50	16	A —33	613	53	52		
	15	T	2.00	30	B 215	440	187	51	d	
	16		1.80	33	B 216	465	175	50		
	16		1.50	31	B 203	517	152	45		50
5–13	13	M	2.49	21	A —31	474	75	53	c	
	14		2.00	20	A —36	539	63	54		
	15	T	2.00	36	B 249	423	201	60	d	
	16		1.80	32	B 253	461	186	53		
	16		1.50	27	B 250	522	161	50		54
5–15	13	M	2.48	35	A —17	449	82	60	c	
	14		2.00	31	A —25	511	67	49		
	14		1.80	33	A —23	536	64	55		
	20	T	1.04	46	C 34	606	93	53	d	
	20		1.04	51	C 30	606	91	55		
	20		1.04	51	C 31	603	92	52		54
5–16	13	M	2.50	32	A —25	454	76	63	c	
	14		1.79	30	A —32	550	59	63		
	14		1.71	29	A —31	560	57	52		59
5–17	13	M	2.50	45	A —10	432	84	60	d	
	14		2.00	46	A —5	491	76	58		
	15		1.50	42	A —7	569	61	57		58
5–18	13	M	2.50	40	A —19	441	77	66	c	
	14		2.00	41	A —21	505	65	67		
	15		1.50	37	A —20	580	54	62		65
5–19	13	M	2.49	25	A —22	462	81	57	b	
	14		2.00	26	A —25	526	69	62		
	15		1.50	26	A —23	591	56	56		58
5–21	15	T	2.00	26	A 51	471	145	59	d	
	16		1.80	27	A 44	504	130	62		
	16		1.50	24	A 45	550	121	53		58
5–22	13	M	2.50	12	A —35	496	76	52	b	
	14		2.00	11	A —40	562	63	49		
	14		1.80	10	A —43	590	58	49		50
5–23	13	M	2.50	8	A —43	514	71	49	b	
	14		2.00	7	A —44	580	60	55		
	15		1.50	5	A —46	648	49	52		52
			Long method					45		
5–24	13	M	2.50	16	A —18	476	90	44	c	
	13		2.20	17	A —19	515	82	47		
	14		1.99	15	A —24	544	74	49		47
5–26	13	M	2.50	32	A —21	445	80	52	b	
	13		2.20	32	A —21	482	74	49		
	14		1.99	32	A —24	513	68	52		51
5–27	13	M	2.50	33	A —29	450	72	54	b	
	13		2.20	30	A —31	490	63	51		
	14		2.00	31	A —31	520	62	57		54
5–28	13	M	2.50	15	A —37	488	73	52	b	
	13		2.21	15	A —38	520	68	47		
	14		2.00	15	A —37	545	63	46		48
5–31	15	T	2.50	60	C 90	323	183	31	d	
	15		2.00	59	C 64	414	144	42		
	16		1.50	69	C 81	474	133	35		36
6– 1	13	M	2.50	48	B 12	423	96	54	b	
	13		2.21	48	B 10	460	86	52		
	14		2.00	46	B 6	491	79	52		
	15	T	1.98	78	D 49	411	120	39	d	
	16		1.80	82	D 50	438	113	39		
	16		1.50	86	D 51	484	103	29		47
6– 2	13	M	2.51	42	A —18	435	78	58	b	
	14		2.20	38	A —21	475	71	54		
	14		1.99	36	A —25	511	65	58		57
6– 4	15	T	2.50	39	B —80	414	95	55	d	
	15		2.00	40	B —89	478	81	52		
	16		1.50	41	B—103	550	67	51		53
6– 5	15	T	2.51	36	B —45	403	109	41	c	
	15		2.00	36	B —54	470	92	41		
	16		1.50	35	B —83	555	72	48		45
			Long method					62		
6– 6	15	T	2.50	26	B —36	422	111	53	c	
	15		2.00	27	B —42	489	95	53		
	16		1.50	29	B —59	560	77	53		53
6– 7	13	M	2.50	49	B 4	420	87	45	d	
	14		2.21	47	B 1	457	78	40		
	14		2.00	43	B —4	494	71	46		44
6– 8	13	M	2.50	60	B 10	412	88	49	c	
	14		2.18	58	B 6	453	78	45		
	14		2.01	56	B 5	476	74	48		47
1946—Continued										
6– 9	15	T	2.50	39	B —60	412	103	60	d	
	15		2.00	43	B —69	472	89	58		
	16		1.50	49	B —95	542	72	58		59
6–14	13	M	2.51	27	A —26	453	78	48	b	
	14		2.21	30	A —25	491	72	50		
	14		2.00	30	A —26	516	67	53		
	15	T	2.00	39	B —46	474	96	56	d	
	16		1.80	40	B —64	507	85	61		
	16		1.50	41	B —89	562	71	55		53
6–15	13	M	2.50	20	A —35	475	73	56	b	
	14		2.20	21	A —35	514	66	56		
	14		2.01	18	A —37	542	63	58		57
6–16	13	M	2.51	27	A —19	455	85	58	b	
	14		2.20	29	A —18	495	78	60		
	14		2.00	29	A —19	521	73	58		
	15	T	2.50	90	D 29	362	103	56	d	
	15		2.00	85	D 25	433	89	51		
	16		1.80	84	D 25	464	85	51		57
6–17	15	T	2.51	15	A —13	451	100	46	c	
	15		2.00	18	A —14	513	83	50		
	16		1.50	27	A —12	566	69	51		49
6–18	13	M	2.51	31	A —24	451	78	54	b	
	14		2.20	30	A —25	487	72	49		
	14		2.00	33	A —25	521	66	59		
	15	T	2.50	43	B 57	381	152	53	c	
	15		2.00	42	B 36	450	127	52		
	16		1.50	41	B —8	534	96	49		53
6–19	13	M	2.50	13	A —42	497	62	51	b	
	14		2.21	12	A —43	533	61	49		
	14		2.00	13	A —43	558	60	51		
	15	T	2.50	40	B —47	396	109	44	b	
	15		2.01	40	B —47	463	96	42		
	16		1.50	43	B —49	535	81	47		47
6–21	16	T	1.69	32	B —24	510	93	36	c	
	16		1.61	33	B —24	524	91	41		
	16		1.50	36	B —26	534	89	37		38
6–22	15	T	2.50	28	B —67	435	97	63	d	
	15		2.00	26	B —69	500	85	59		
	16		1.50	29	B —84	569	70	60		61
6–23	15	T	2.50	55	C 10	381	126	61	d	
	15		2.20	57	C 10	425	117	63		
	15		2.00	59	C 11	446	112	60		61
6–24	17	T	1.27	59	C 97	538	129	59	d	
	17		1.23	58	C 74	551	117	52		
	17		1.20	56	C 69	556	113	49		53
6–25	15	T	2.50	39	B —77	415	96	51	c	
	15		2.00	43	B —72	468	88	50		
	16		1.50	49	B —59	534	82	55		52
			Long method					31		
6–26	13	M	2.50	57	B 4	419	82	55	c	
	14		2.20	62	B 6	452	76	49		
	14		2.01	56	B 2	484	71	55		
	15	T	2.50	27	B 2	417	129	64	d	
	15		2.00	28	B 3	477	111	52		
	16		1.50	28	B —11	552	92	49		54
6–27	13	M	2.50	26	A —30	461	74	55	c	
	14		2.20	25	A —32	505	67	55		
	14		2.00	22	A —35	532	63	48		
	15	T	2.50	55	C —36	395	94	58	c	
	15		2.20	55	C —34	436	83	55		
	15		2.00	56	C —43	464	79	56		54
6–28	13	M	2.50	18	A —37	481	71	53	b	
	14		2.21	18	A —37	516	66	50		
	14		2.00	18	A —38	540	62	50		
	16	T	1.66	25	B —93	550	71	52	c	
	16		1.58	26	B —97	559	68	50		
	16		1.50	26	B —97	574	66	54		51
6–29	13	M	2.50	61	B 6	415	82	51	c	
	14		1.99	53	B —2	482	68	55		
	15	T	2.50	23	B —60	441	101	62	c	
	15		2.00	26	B —47	496	93	58		55
	16		1.50	30	B —46	555	81	50		
6–30	12	M	2.50	32	A —27	455	75	57	c	
	14		2.20	27	A —30	496	69	52		
	14		2.00	28	A —29	524	65	53		
	15	T	2.00	73	C 125	385	183	52	c	
	16		1.80	70	C 116	421	165	50		
	16		1.50	68	C 111	471	146	43		51
1946—Continued										
7– 1	13	M	2.50	14	A —38	491	73	54	b	
	14		2.20	15	A —36	527	68	53		
	14		2.00	15	A —37	549	64	51		53
7– 2	15	T	2.50	49	C 124	324	209	27	d	
	15		2.20	45	C 110	381	180	38		
	15		2.00	47	C 106	409	168	38		34
7– 3	18	T	1.16	70	C 112	534	126	40	d	
	18		1.14	74	C 112	535	125	39		
	18		1.11	81	C 110	540	124	42		40
7– 4	13	M	2.50	46	B —4	434	80	52	c	
	14		2.20	47	B —7	467	71	48		
	14		2.00	46	B —8	497	66	55		52
7– 5	15	T	2.00	25	A 5	490	98	46	c	
	16		1.80	26	A 9	510	96	45		
	16		1.50	25	A 2	561	82	46		46
7– 6	15	T	2.00	37	B 268	404	208	38	d	
	16		1.80	39	B 267	435	192	35		
	16		1.50	43	B 287	487	173	36		36
7– 7	15	T	2.50	18	A —10	451	98	59	d	
	15		2.20	18	A —11	491	91	60		
	15		2.00	18	A —11	516	86	56		58
7– 8	14	M	2.00	29	A —36	522	61	55	c	
	14		1.80	30	A —35	549	57	55		
	15	T	2.50	27	B —50	431	104	60	c	
	15		2.00	29	B —56	492	90	53		
	16		1.50	32	B —72	558	74	49		54
			Long method					43		
7– 9	13	M	2.50	27	A —32	463	73	62	b	
	14		2.21	27	A —33	501	66	59		
	14		2.00	27	A —34	527	62	57		
	15	T	2.49	32	B —66	425	98	61	c	
	15		2.20	31	B —63	463	92	57		
	15		2.00	29	B —65	494	87	57		58
7–10	13	M	2.50	32	A —21	450	80	58	b	
	14		2.20	32	A —24	489	72	57		
	14		2.00	32	A —25	516	67	60		58
7–11	14	M	2.20	30	A —14	493	80	64	c	
	14		2.00	29	A —17	522	75	60		
	14		1.80	26	A —13	547	73	57		60
7–14	15	T	2.50	80	B 20	372	96	51	c	
	15		2.20	80	B 20	412	89	55		
	15		2.00	77	B 19	438	85	53		53
7–15	13	M	2.51	26	A —30	461	74	54	b	
	14		2.20	25	A —32	504	68	56		
	14		1.98	26	A —32	532	63	57		
	15	T	2.50	71	C —43	379	91	45	c	
	15		2.20	68	C —46	423	83	48		
	15		2.00	73	C —47	446	79	46		51
7–16	13	M	2.50	21	A —31	475	70	60	b	
	14		2.20	20	A —35	518	67	58		
	14		2.00	19	A —38	544	62	58		
	15	T	2.51	75	C —42	374	93	46	c	
	15		2.20	76	C —43	416	86	50		
	15		2.00	72	C —42	443	82	46		53
7–18	13	M	2.50	24	A —8	461	96	57	c	
	14		2.20	23	A —13	501	84	53		
	14		2.00	22	A —20	528	75	53		54
7–19	13	M	2.49	49	B 1	431	84	55	c	
	14		2.20	48	B 1	465	77	49		
	14		2.00	45	B 2	495	72	57		54
7–20	13	M	2.50	61	B 0	423	76	57	c	
	14		2.20	58	B 1	460	71	55		
	14		2.00	55	B 2	483	68	55		56
7–21	13	M	2.50	41	A —17	440	78	65	c	
	14		2.20	42	A —19	477	71	61		
	14		2.00	35	A —23	509	66	60		62
7–23	13	M	2.50	18	A —38	481	70	53	b	
	14		2.20	17	A —41	522	63	52		
	14		2.00	17	A —41	545	60	52		52
7–24	13	M	2.50	14	A —38	489	73	48	b	
	14		2.21	14	A —38	525	67	48		
	14		1.99	14	A —41	549	62	45		47
7–25	13	M	2.50	12	A —39	495	75	42	d	
	14		2.00	10	A —39	561	64	44		
	15		1.50	11	A —37	633	52	53		46
			Long method					43		
7–26	13	M	2.49	10	A —28	495	84	45	b	
	13		2.21	9	A —29	531	77	46		
	14		1.99	9	A —33	563	70	46		46

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1946—Continued											
7–27	13	M	2.50	12	A	—15	485	94	40	b	
	13		2.20	12	A	—18	521	85	40		
	14		2.00	12	A	—20	546	78	42		
	15	T	2.49	46	C	—51	409	80	52	c	
	15		2.20	47	C	—55	443	74	47		
	16		2.00	46	C	—56	472	69	49		44
7–30	13	M	2.49	44	A	—20	427	75	47	c	
	13		2.21	45	A	—20	465	69	50		
	14		2.00	43	A	—22	494	64	49		49
7–31	13	M	2.50	53	B	18	407	101	33	d	
	13		2.20	52	B	17	447	91	39		
	14		1.99	52	B	14	475	83	42		
	15	T	2.50	49	C	—34	392	94	41	d	
	16		2.00	48	C	—38	460	81	39		
	16		1.50	54	C	—27	531	68	51		41
			Long method						40		
8– 1	13	M	2.49	47	B	17	414	103	36	c	
	13		2.20	45	B	15	450	88	36		
	14		2.00	43	B	7	482	86	42		38
8– 2	13	M	2.50	16	A	—32	482	76	50	c	
	13		2.20	15	A	—36	521	65	47		
	14		2.00	14	A	—38	549	64	47		
	15	T	2.50	126	D	63	313	128	56	d	
	15		2.19	129	D	61	358	115	52		
	16		2.00	133	D	60	384	106	49		50
8– 4	14	M	1.80	9	A	—42	593	60	48	b	
	14		1.68	9	A	—40	610	56	51		
	15		1.60	10	A	—37	619	54	51		50
8– 6	13	M	2.49	5	A	—47	533	68	53	a	
	13		2.20	5	A	—47	566	63	52		
	14		2.00	5	A	—50	590	58	53		
	16	T	1.60	160	D	163	374	181	36	d	
	17		1.50	145	D	138	406	158	35		
	17		1.43	145	D	140	421	154	33		48
8– 7	13	M	2.50	3	A	—45	537	71	51	a	
	13		2.21	2	A	—47	572	61	49		
	14		1.99	2	A	—49	600	60	49		
	16	T	2.00	116	D	86	363	146	36	d	
	16		1.80	114	D	81	401	134	36		
	17		1.50	116	D	82	449	121	29		47
8– 8	13	M	2.50	5	A	—40	526	74	49	a	
	13		2.20	4	A	—43	563	67	46		
	14		1.99	4	A	—45	589	62	45		47
8– 9	13	M	2.49	4	A	—44	529	72	47	a	
	13		2.20	3	A	—43	566	67	51		
	14		2.00	3	A	—45	593	62	50		49
8–10	13	M	2.50	8	A	—28	508	83	49	a	
	13		2.20	7	A	—29	543	77	46		
	14		2.00	7	A	—33	570	70	49		48
8–11	13	M	2.48	14	A	—25	486	85	49	a	
	13		2.20	13	A	—26	521	77	44		
	14		2.00	13	A	—26	544	73	46		
	17	T	1.50	129	D	65	457	99	36	d	
	17		1.44	133	D	69	463	100	36		
	17		1.39	137	D	77	466	104	30		44
8–12	13	M	2.21	34	A	—13	474	79	47	b	
	13		2.00	33	A	—16	502	73	48		
	14		1.80	33	A	—18	534	68	51		
	16	T	2.00	159	D	92	353	131	52	d	
	16		1.80	158	D	88	390	121	53		
	17		1.50	158	D	84	441	106	41		49
8–13	13	M	2.50	9	A	—38	511	75	53	b	
	13		2.00	7	A	—41	573	64	45		
	14		1.80	7	A	—42	603	60	51		
	15	T	2.49	72	D	27	365	110	33	d	
	16		2.00	72	D	26	429	96	33		
	17		1.50	91	D	37	493	86	37		44
			Long method						27		
8–14	13	M	2.51	14	A	—28	484	82	44	c	
	13		2.01	13	A	—30	549	70	50		
	13		1.80	13	A	—30	579	66	52		
	16	T	2.00	33	B	—75	480	84	37	c	
	16		1.80	33	B	—80	508	78	43		
	17		1.50	39	B	—80	545	73	43		46
8–15	13	M	2.51	21	A	—1	453	103	45	c	
	13		2.01	20	A	—9	524	84	50		
	14		1.80	19	A	—14	554	76	47		47
8–16	13	M	2.49	24	A	12	442	115	36	c	
	13		2.00	24	A	10	508	97	40		
	14		1.80	23	A	9	537	89	39		
	15	T	2.50	59	B	—120	389	86	45	d	
	15		2.20	40	B	—100	451	81	48		
	16		2.00	43	B	—108	478	75	52		43
8–17	15	T	2.51	45	B	—116	410	82	54	c	
	15		2.20	44	B	—116	448	77	50		
	16		2.00	47	B	—115	472	74	50		51
8–20	13	M	2.51	24	A	—3	450	100	49	d	
	13		2.00	24	A	—5	515	86	45		
	14		1.80	22	A	—10	545	77	46		47
8–22	13	M	2.50	28	A	—23	456	80	53	c	
	13		2.00	27	A	—25	520	69	51		
	14		1.80	28	A	—28	548	62	52		52
8–23	15	T	2.50	105	D	47	329	121	41	d	
	16		2.20	105	D	47	374	111	41		
	16		2.00	107	D	50	395	108	36		39
8–24	15	T	2.50	23	A	—23	447	79	60	c	
	16		2.20	23	A	—25	486	73	59		
	16		2.00	21	A	—27	539	68	53		57
8–25	15	T	2.50	31	B	—108	433	81	53	c	
	16		2.20	33	B	—111	474	75	57		
	16		2.00	34	B	—117	496	69	57		56
8–26	15	T	2.51	27	B	—112	439	78	54	b	
	16		2.01	32	B	—122	508	67	55		
	17		1.50	37	B	—124	561	55	49		52
			Long method						46		
8–27	15	T	2.50	29	B	—107	435	80	54	b	
	16		2.20	28	B	—115	474	73	49		
	16		2.00	28	B	—115	501	69	52		52
8–28	15	T	2.50	23	A	—9	436	95	46	b	
	16		2.20	22	A	—10	473	90	43		
	16		2.00	22	A	—13	504	82	49		46
8–29	15	T	2.50	52	C	—54	405	80	52	c	
	16		2.20	52	C	—60	446	72	55		
	16		2.00	49	C	—59	474	68	53		53
8–30	15	T	2.50	63	C	—41	388	91	45	c	
	16		2.20	63	C	—46	424	82	42		
	16		2.01	65	C	—41	452	81	48		45
8–31	13	M	2.50	19	A	—16	466	91	44	c	
	13		2.00	18	A	—18	532	77	46		
	13		1.80	17	A	—23	564	69	49		
	15	T	2.50	23	A	—20	446	83	62	c	
	16		2.20	23	A	—23	486	75	59		
	16		1.99	25	A	—20	502	71	58		53
9– 1	13	M	2.50	17	A	—17	466	91	41	d	
	13		2.01	18	A	—18	531	77	46		
	15	T	2.49	31	B	—108	436	80	58	c	
	15		2.20	29	B	—110	475	75	57		
	16		2.00	30	B	—113	498	70	52		50
9– 3	17	T	1.50	165	D	44	472	63	57	d	
	17		1.45	163	D	44	480	62	53		
	17		1.39	167	D	44	492	60	55		55
9– 5	13	M	2.51	16	A	—22	476	86	44	b	
	13		2.00	16	A	—26	539	72	45		
	14		1.50	10	A	—33	629	55	51		
			Long method						42		
	15	T	2.50	48	B	—137	411	75	55	c	
	16		2.20	45	B	—136	454	70	54		
	16		2.00	46	B	—136	484	66	57		50
9– 6	12	M	2.50	6	A	—43	523	70	50	b	
	13		2.01	5	A	—47	586	60	52		
	13		1.79	5	A	—48	614	56	53		
	15	T	2.50	17	A	—28	464	78	57	c	
	16		2.21	17	A	—30	500	72	56		
	16		2.00	16	A	—32	527	67	53		53
9– 7	12	M	2.49	13	A	—30	495	80	56	b	
	13		1.98	13	A	—32	560	68	55		
	13		1.79	12	A	—37	586	62	54		
	15	T	2.50	20	A	—22	454	83	62	c	
	16		2.20	20	A	—25	489	75	55		
	16		2.00	22	A	—23	513	72	55		56
9– 8	12	M	2.51	15	A	—33	490	77	60	b	
	13		2.00	15	A	—36	555	65	59		
	13		1.80	14	A	—39	583	60	56		
	15	T	2.50	12	A	—22	474	90	59	c	
	16		2.00	13	A	—23	530	78	53		
	17		1.50	14	A	—21	595	69	46		56
9– 9	12	M	2.51	11	A	—29	492	81	52	b	
	13		2.01	12	A	—32	555	69	54		
	13		1.80	11	A	—35	586	63	54		
	15	T	2.50	11	A	—21	476	93	57	c	
	15		2.20	11	A	—21	508	85	54		
	16		2.00	12	A	—23	536	79	54		54
9–10	12	M	2.51	6	A	—38	518	75	50	b	
	13		2.00	5	A	—42	585	64	51		
	13		1.77	3	A	—45	620	58	53		51
9–11	12	M	2.49	24	A	—20	461	85	53	b	
	13		2.21	24	A	—21	498	77	52		
	13		2.01	24	A	—23	525	72	55		53
9–12	12	M	2.49	38	A	—14	442	82	59	c	
	13		2.00	37	A	—12	502	74	54		
	13		1.80	36	A	—16	534	68	56		56
9–14	12	M	2.49	28	A	—7	450	94	49	c	
	13		2.00	26	A	—12	517	79	49		
	13		1.77	25	A	—15	547	71	46		48
9–15	12	M	2.49	22	A	—25	467	81	52	b	
	13		2.00	22	A	—27	533	69	54		
	13		1.80	21	A	—30	561	63	53		53
9–16	12	M	2.49	23	A	—6	456	98	54	b	
	13		2.00	22	A	—12	526	81	57		
	13		1.80	23	A	—13	554	74	57		
	16	T	2.20	66	C	—61	435	73	51	b	
	16		2.00	64	C	—61	461	69	51		
	16		1.81	67	C	—63	486	65	51		54
9–17	12	M	2.50	24	A	23	441	125	46	b	
	13		2.00	23	A	19	510	104	46		
	13		1.80	23	A	15	537	94	47		46
9–19	16	T	2.50	69	C	—21	378	107	50	c	
	16		2.00	69	C	—29	444	89	46		
	17		1.50	65	C	—40	522	72	42		45
			Long method						44		
9–20	16	T	2.50	37	B	—46	403	109	39	d	
	16		2.20	35	B	—35	439	104	31		
	16		2.00	35	B	—27	465	102	35		35
9–21	16	T	2.49	48	C	—20	393	105	46	c	
	16		2.20	49	C	—16	428	99	43		
	16		1.99	49	C	—16	456	94	47		45
9–22	16	T	2.50	54	C	—20	386	104	50	c	
	16		2.20	62	C	—19	420	99	50		
	16		2.00	56	C	—22	452	92	47		49
9–23	12	M	2.50	47	B	11	413	95	50	c	
	13		2.00	47	B	11	485	83	52		
	13		1.80	46	B	9	516	76	51		51
9–25	12	M	2.50	21	A	—21	459	85	34	d	
	13		2.00	19	A	—29	535	69	44		
	14		1.50	16	A	—28	609	56	45		
			Long method						37		
	16	T	2.50	66	C	—10	371	114	48	c	
	16		2.20	67	C	—14	411	103	47		
	16		2.00	70	C	—16	434	97	42		44
9–26	12	M	2.51	15	A	—19	479	89	50	b	
	13		2.00	14	A	—25	546	74	50		
	13		1.80	14	A	—28	574	68	53		
	16	T	2.50	85	D	20	363	94	43	d	
	16		2.20	89	D	22	401	88	38		
	16		2.00	99	D	28	420	86	41		47
9–27	12	M	2.51	8	A	—30	507	82	51	b	
	13		2.00	6	A	—36	577	68	50		
	13		1.80	5	A	—38	604	63	53		
	17	T	1.50	109	D	58	476	101	44	d	
	18		1.47	106	D	56	482	98	45		
	18		1.42	106	D	51	492	94	34		47
10– 2	16	T	2.51	13	A	—15	464	97	55	c	
	16		2.00	11	A	—21	533	82	49		
	17		1.50	12	A	—21	598	71	45		50
			Long method						40		
10– 4	18	T	1.58	61	C	—34	508	76	38	c	
	19		1.50	55	C	—41	528	70	41		
	19		1.46	56	C	—40	536	70	40		40
10– 6	13	M	1.43	61	B	46	544	83	46	d	
	14		1.38	58	B	44	559	80	49		
	14		1.33	55	B	43	566	79	43		
	16	T	2.50	45	B	—49	384	110	32	c	
	16		2.19	45	B	—46	423	103	31		
	16		2.00	45	B	—49	452	97	36		39

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1946—Continued										
10- 7	12	M	2.50	26	A −3	466	99	46	c	
	12		2.00	23	A −12	519	80	48		
	13		1.80	23	A −12	544	75	46		
	16	T	2.50	51	C −23	399	102	58	c	
	16		2.20	51	C −27	440	93	56		
	16		2.00	52	C −30	466	86	55		51
10- 8	12	M	2.50	36	A 31	419	126	42	c	
	12		2.01	38	A 37	482	111	45		
	13		1.80	37	A 32	516	100	48		45
10- 9	13	M	1.80	21	A 1	546	85	47	b	
	13		1.70	21	A 4	562	83	49		
	13		1.50	20	A −1	596	72	50		
	16	T	2.50	32	B −63	423	100	50	c	
	16		2.20	32	B −69	463	91	49		
	16		2.01	31	B −74	489	84	47		49
10-10	12	M	2.50	34	A 54	413	147	41	c	
	12		2.20	33	A 51	455	135	42		
	12		2.00	33	A 50	486	124	43		42
10-11	13	M	1.79	39	A 52	509	113	41	c	
	13		1.64	38	A 52	535	105	38		
	13		1.50	39	A 56	554	100	41		
	16	T	2.50	47	B −104	405	38	51	c	
	16		2.21	46	B −105	445	81	50		
	17		2.00	42	B −109	480	74	51		46
10-12	16	T	2.50	50	C −54	408	79	50	b	
	16		2.20	49	C −57	447	73	51		
	17		2.00	47	C −54	476	71	53		51
10-13	16	T	2.50	33	B −89	424	89	48	b	
	16		2.20	33	B −86	462	84	50		
	17		2.00	32	B −91	490	78	49		49
10-15	13	M	1.80	16	A −19	559	72	45	d	
	13		1.65	16	A −17	589	68	52		
	13		1.50	14	A −22	617	61	57		
	16	T	2.20	36	B −98	460	81	49	c	
	17		2.00	37	B −93	481	79	48		
	17		1.81	34	B −100	515	72	50		50
10-16	12	M	2.50	15	A −8	476	99	49	b	
	12		2.00	14	A −13	540	83	50		
	13		1.80	14	A −15	569	77	52		50
10-17	12	M	2.50	15	A 3	467	112	41	c	
	12		2.00	14	A 1	536	94	47		
	13		1.80	14	A −2	567	86	51		46
10-18	12	M	2.51	30	A 22	432	123	50	b	
	12		2.00	29	A 20	500	103	48		
	13		1.80	29	A 19	532	95	52		
	16	T	2.50	23	A −17	445	87	58	d	
	16		2.20	22	A −18	482	81	53		
	17		2.00	20	A −20	508	76	47		51
10-19	12	M	2.50	30	A 1	441	103	53	b	
	12		2.00	29	A −6	512	83	54		
	13		1.80	28	A −7	542	77	57		55
10-20	12	M	2.51	32	A 14	435	113	51	b	
	12		2.00	28	A 9	509	94	55		
	13		1.80	28	A 6	535	86	50		
	16	T	2.50	35	B −99	425	85	52	d	
	16		2.20	34	B −95	465	81	51		
	20		1.42	49	B −70	538	77	42		50
10-21	12	M	2.50	27	A 24	441	128	54	c	
	12		2.00	24	A 15	512	101	57		
	13		1.80	22	A 8	547	89	55		
	16	T	2.50	18	A −17	451	90	52	c	
	16		2.20	22	A −10	480	85	55		
	17		2.00	21	A −14	505	81	48		53
10-22	12	M	2.50	21	A 35	449	137	54	c	
	12		2.00	18	A 28	518	113	50		
	12		1.80	19	A 25	549	103	54		
	16	T	2.50	77	D 12	379	87	43	c	
	17		2.00	76	D 10	446	75	50		
	18		1.50	76	D 14	512	70	43		49
			Long method					50		
10-23	12	M	2.50	17	A 12	464	117	52	b	
	12		2.01	16	A 8	525	93	47		
	12		1.80	17	A 8	552	91	49		
	16	T	2.50	63	C −48	392	87	49	c	
	17		2.20	65	C −51	433	79	52		
	17		2.00	69	C −52	454	75	49		49
10-24	12	M	2.51	20	A 26	446	129	48	b	
	12		2.00	19	A 19	517	106	47		
	12		1.80	20	A 20	544	98	46		47
1946—Continued										
10-28	14	M	1.33	45	B 3	591	57	45	d	
	14		1.28	46	B 5	603	56	53		
	14		1.24	45	B 0	609	53	49		49
10-29	13	M	1.47	57	B 35	546	78	44	d	
	13		1.40	56	B 30	566	72	52		
	13		1.35	51	B 27	576	70	48		
	16	T	2.50	29	B −42	423	108	58	d	
	17		2.20	29	B −37	463	102	57		
	17		2.00	29	B −28	487	100	55		52
10-30	13	M	1.34	30	A −12	609	58	48	d	
	14		1.30	28	A −16	620	55	47		
	14		1.25	27	A −20	628	53	46		
	16	T	2.50	8	A −22	486	94	55	b	
	17		2.20	8	A −23	525	86	56		
	17		2.00	8	A −27	549	78	53		51
10-31	16	T	2.50	16	A −10	454	101	53	b	
	17		2.20	16	A −9	487	95	45		
	17		2.00	16	A −10	515	89	49		49
11- 1	12	M	2.51	32	A −7	442	93	54	c	
	12		2.00	30	A −13	514	77	56		
	12		1.81	30	A −17	541	70	55		
	16	T	2.50	52	C −32	397	96	58	c	
	17		2.20	58	C −31	435	91	61		
	17		2.00	47	C −34	471	83	59		57
11- 2	17	T	1.92	15	A 12	520	109	50	d	
	18		1.80	16	A 18	536	111	52		
	18		1.72	12	A 7	556	102	53		52
11- 3	16	T	2.50	16	A −9	448	102	48	b	
	17		2.20	15	A −13	491	92	45		
	17		2.00	13	A −15	521	86	46		46
11- 5	13	M	1.42	17	A −14	620	63	49	c	
	13		1.37	16	A −15	628	59	47		
	13		1.32	18	A −12	633	60	49		
	17	T	2.50	35	B −46	417	108	56	c	
	18		2.20	33	B −61	461	94	54		
	18		2.00	32	B −66	489	87	51		51
11- 6	13	M	1.56	20	A −1	591	73	48	c	
	13		1.46	20	A 0	606	71	50		
	13		1.39	20	A −2	619	67	51		
	19	T	1.60	52	C −24	522	79	54	d	
	19		1.58	52	C −24	533	80	51		
	19		1.57	54	C −20	532	81	52		51
11- 7	12	M	2.47	13	A −20	484	90	52	b	
	12		2.00	14	A −21	544	77	53		
	12		1.80	13	A −26	580	69	57		54
11- 8	12	M	2.51	12	A −28	491	82	49	b	
	12		2.00	12	A −31	557	70	52		
	12		1.81	10	A −35	586	63	53		51
11- 9	17	T	2.50	18	A 1	440	112	48	c	
	17		2.20	19	A 1	479	103	52		
	17		2.00	16	A −4	512	95	51		50
11-11	13	M	1.59	45	B 95	519	132	41	c	
	13		1.51	43	B 93	535	126	39		
	13		1.44	46	B 96	549	121	44		41
11-12	13	M	1.45	40	A 89	557	116	34	d	
	13		1.39	37	A 85	573	109	38		
	13		1.33	35	A 79	584	102	37		36
11-13	13	M	1.58	74	B 166	482	175	59	c	
	13		1.50	73	B 169	491	170	56		
	13		1.44	74	B 173	505	167	61		59
11-15	17	T	2.50	26	A −7	438	96	60	b	
	17		2.20	22	A −12	485	87	61		
	18		2.00	23	A −12	509	82	62		61
11-16	17	T	2.50	26	A 29	429	138	76	d	
	17		2.20	25	A 26	469	126	72		
	18		2.00	25	A 24	497	118	68		68
11-17	17	T	2.50	53	C −29	404	99	65	c	
	17		2.20	50	C −29	446	91	64		
	18		2.00	50	C −34	473	83	62		64
11-19	12	M	2.50	43	A 40	411	131	48	d	
	13		1.80	39	A 23	520	94	54		
	13		1.50	35	A 14	569	77	49		50
11-25	17	T	2.50	29	B −115	441	77	54	b	
	17		2.20	34	B −128	473	69	54		
	18		2.00	33	B −120	500	68	53		54
11-26	18	T	2.10	85	D 7	439	70	55	c	
	19		2.00	76	D 5	456	69	51		
	19		1.95	74	D 4	464	68	55		52
			Long method					50		
1946—Continued										
11-27	17	T	2.50	37	B −121	428	77	50	b	
	18		2.20	38	B −127	464	72	47		
	18		2.00	38	B −124	490	68	48		48
11-28	13	M	1.55	32	A 63	551	110	32	d	
	13		1.47	31	A 58	566	102	36		
	13		1.42	30	A 60	575	100	34		
	17	T	2.32	29	B −107	463	77	54	c	
	18		2.20	32	B −114	474	74	50		
	18		2.00	33	B −111	494	71	47		44
11-29	17	T	2.50	46	B −128	420	77	57	b	
	18		2.20	44	B −130	460	72	57		
	18		2.00	43	B −128	487	68	55		56
11-30	17	T	2.50	50	C −52	417	80	60	c	
	18		2.20	58	C −56	434	75	57		
	18		2.00	59	C −55	469	72	56		58
12- 3	12	M	2.00	37	A 77	472	143	37	p	
	12		1.80	36	A 74	504	130	35		
	13		1.49	33	A 69	555	108	38		
12- 7	18	T	2.33	12	A −11	491	100	61	c	
	18		2.20	13	A −10	505	96	59		
	18		2.01	15	A −3	521	97	58		59
12-14	17	T	2.51	13	A −29	472	80	49	b	
	18		2.20	12	A −32	513	74	48		
	18		2.00	13	A −31	533	70	48		48
12-16	17	T	2.51	8	A −23	491	92	64	c	
	18		2.07	8	A −30	543	76	54		
	19		2.01	8	A −30	550	75	55		58
12-22	13	M	1.70	35	A 39	531	102	42	p	
	13		1.61	35	A 40	550	98	41		
	13		1.48	35	A 36	560	89	34		
12-23	12	M	2.50	60	B 103	359	191	38	p	
	12		2.00	57	B 102	436	161	43		
	12		1.80	57	B 97	468	143	41		
12-24	12	M	2.00	50	B 102	439	164	30	p	
	12		1.80	48	B 103	468	152	29		
	13		1.50	47	B 93	531	124	22		
12-25	12	M	2.50	82	C 163	323	214	50	d	
	12		2.01	81	C 162	411	179	56		
	13		1.50	79	C 164	493	141	45		50
12-26	12	M	1.80	86	C 118	445	143	49	d	
	13		1.68	91	C 120	468	137	49		
	13		1.50	91	C 127	495	128	52		50
12-28	13	M	1.65	58	B 47	509	95	46	c	
	13		1.57	59	B 47	525	90	50		
	13		1.45	56	B 46	549	85	50		49
12-29	18	T	2.50	8	A 0	475	119	63	c	
	18		2.20	9	A −1	510	108	56		
	19		2.00	8	A −2	538	103	56		58
			Long method					63		
12-31	18	T	2.50	10	A −4	470	114	64	c	
	18		2.19	11	A −7	506	101	62		
	19		2.00	10	A −8	527	96	53		60
1947										
1- 1	13	M	1.39	142	C 185	472	151	69	d	
	14		1.34	143	C 186	480	148	65		
	14		1.29	144	C 187	490	144	68		67
1- 2	12	M	2.00	143	C 202	359	215	53	d	
	13		1.80	143	C 201	395	197	56		
	13		1.50	138	C 206	465	170	50		
	18	T	2.50	12	A 3	505	121	65	d	
	18		2.20	11	A 0	538	108	51		
	19		2.00	10	A 4	484	108	51		56
1- 3	12	M	2.00	93	C 212	391	209	53	c	
	13		1.80	90	C 200	429	186	53		
	13		1.50	86	C 190	489	155	54		53
1- 4	13	M	1.46	114	C 173	478	149	52	c	
	13		1.40	117	C 173	489	144	55		
	14		1.34	117	C 164	502	135	50		
	18	T	2.49	22	A −7	446	98	64	b	
	18		2.20	25	A −11	492	86	62		
	19		2.00	24	A −14	507	80	58		57
1- 6	18	T	2.51	36	B −48	407	108	51	d	
	18		2.36	36	B −26	426	113	55		
	18		2.20	37	B −29	446	107	51		52
1- 7	18	T	2.49	19	A −18	455	88	62	b	
	18		2.20	18	A −20	473	81	57		
	19		2.00	17	A −22	509	76	56		58

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1947—Continued											
1- 8	18	T	2.50	32	B	—105	435	82	55	b	
	18		2.20	31	B	—108	472	76	51		
	19		2.00	32	B	—108	497	72	51		
			Long method						48		52
1- 9	17	T	2.50	41	B	—78	416	96	56	b	
	18		2.20	39	B	—83	456	87	55		
	19		2.00	38	B	—85	486	82	54		55
1-13	17	T	2.50	17	A	—17	462	91	69	c	
	18		2.19	17	A	—16	491	86	58		
	18		2.00	16	A	—17	522	82	57		61
1-14	13	M	1.55	59	B	67	518	105	50	c	
	13		1.48	62	8	70	533	102	53		
	13		1.42	60	B	66	545	96	52		
	18	T	2.20	16	A	—18	496	85	62	c	
	18		2.00	18	A	—12	512	85	52		
	19		1.95	16	A	—13	523	85	57		54
1-15	17	T	2.51	13	A	—9	451	105	48	c	
	18		2.20	12	A	—14	491	93	44		
	18		2.00	11	A	—18	529	85	53		48
1-16	17	T	2.50	11	A	—24	470	88	49	b	
	18		2.21	10	A	—26	506	81	48		
	18		2.00	10	A	—27	530	76	43		47
1-17	18	T	1.97	23	A	—11	506	82	53	b	
	19		1.90	20	A	—14	514	80	43		
	19		1.80	22	A	—12	529	79	48		48
1-18	17	T	2.50	18	A	—13	445	95	50	b	
	18		2.20	17	A	—13	482	89	48		
	18		2.00	17	A	—17	509	81	44		
			Long method						59		48
1-19	17	T	2.50	17	A	—21	449	87	47	b	
	18		2.20	17	A	—23	490	79	49		
	18		2.00	16	A	—23	514	76	44		47
1-20	17	T	2.50	40	B	—106	413	84	50	b	
	18		2.20	40	B	—108	451	78	49		
	18		2.00	41	B	—106	477	75	51		50
1-21	17	T	2.50	36	B	—112	429	81	57	b	
	18		2.21	35	B	—111	467	76	57		
	18		2.00	33	B	—111	493	71	55		56
1-22	19	T	1.88	35	B	—113	501	69	50	b	
	19		1.84	35	B	—113	512	68	55		
	19		1.81	35	B	—116	518	67	54		53
1-24	18	T	2.20	58	C	104	395	178	81	p	
	18		1.97	57	C	109	431	170	83		
	19		1.80	58	C	94	458	152	75		
1-25	17	T	2.49	16	A	—13	457	97	58	c	
	18		2.20	16	A	—15	489	88	52		
	18		2.00	15	A	—19	514	80	45		52
1-26	17	T	2.49	68	C	—52	408	84	51	c	
	18		2.21	66	C	—46	425	82	49		
	18		2.00	68	C	—49	450	77	51		50
1-27	12	M	2.49	119	C	38	340	138	43	d	
	12		2.00	117	C	34	411	116	42		
	13		1.50	117	C	25	496	89	42		
	17	T	2.49	34	B	—95	429	86	56	b	
	18		2.20	35	B	—99	459	80	49		
	18		2.00	33	B	—94	489	77	50		47
1-28	12	M	2.51	78	C	11	382	110	60	d	
	12		2.00	80	C	12	449	95	53		
	13		1.50	69	C	13	532	74	49		
			Long method						42		54
1-29	12	M	2.50	63	B	86	374	170	58	c	
	12		2.00	58	B	75	454	136	56		
	13		1.50	58	B	83	527	113	52		55
1-30	12	M	2.50	85	C	117	349	183	56	c	
	12		2.00	83	C	108	426	149	58		
	13		1.80	82	C	107	455	137	53		
	17	T	2.36	39	B	—111	438	79	52	b	
	18		2.21	37	B	—113	462	76	52		
	18		1.88	32	B	—116	512	67	52		54
1-31	19	T	1.70	33	B	—122	534	64	49	b	
	19		1.68	34	B	—123	537	64	51		
	19		1.66	33	B	—117	542	64	50		50
2- 5	17	T	2.49	74	C	—55	384	83	48	c	
	17		2.21	74	C	—56	423	77	50		
	18		2.00	72	C	—58	453	72	52		
			Long method						46		48
2- 8	13	M	1.80	62	B	63	475	115	42	b	
	13		1.65	61	B	65	503	108	43		
	13		1.50	60	B	62	527	99	44		43
2-11	13	M	1.63	129	C	223	430	187	52	c	
	13		1.55	129	C	223	446	180	51		
	13		1.49	129	C	217	460	172	56		53
2-14	17	T	2.50	13	A	—23	460	88	45	b	
	17		2.20	13	A	—22	499	83	47		
	17		2.01	15	A	—21	522	78	49		47
2-15	17	T	2.49	39	B	—88	415	91	50	b	
	17		2.20	41	B	—89	448	85	45		
	17		2.00	45	B	—94	470	81	48		48
2-16	14	M	1.23	71	B	67	561	82	43	c	
	14		1.21	69	B	65	573	80	47		
	15		1.18	70	B	67	578	79	48		
	17	T	2.21	25	A	—3	471	95	57	c	
	17		2.00	21	A	—6	501	90	50		
	18		1.80	20	A	—8	533	83	47		48
2-17	13	M	1.80	105	C	121	434	149	49	d	
	13		1.66	102	C	122	456	139	40		
	13		1.49	107	C	118	487	126	47		45
2-19	17	T	2.50	24	A	4	425	112	45	b	
	17		1.99	23	A	—2	501	93	52		
	18		1.78	29	A	5	519	90	54		
			Long method						54		50
2-21	13	M	2.00	96	C	262	384	238	58	d	
	13		1.80	92	C	261	416	217	57		
	14		1.50	96	C	258	468	186	52		56
2-22	17	T	2.49	42	B	98	380	165	74	d	
	17		2.18	42	B	92	424	153	67		
	17		2.00	39	B	96	446	147	59		60
2-23	14	M	1.37	55	B	112	545	125	51	d	
	14		1.33	56	B	123	550	129	49		
	14		1.29	56	B	123	558	125	48		
	17	T	2.50	24	A	50	410	167	59	c	
	17		2.00	22	A	44	484	141	60		
	18		1.80	23	A	41	512	130	53		53
2-24	17	T	2.50	14	A	—14	457	97	47	b	
	17		2.00	16	A	—13	515	86	49		
	18		1.80	18	A	—11	535	81	48		48
2-27	12	M	2.49	55	B	84	384	171	54	c	
	13		2.00	45	B	60	465	129	41		
	14		1.50	45	B	55	543	99	40		45
2-28	12	M	2.50	74	B	98	354	178	46	c	
	13		2.00	70	B	92	430	146	45		
	14		1.50	67	B	89	514	114	47		46
3- 1	12	M	2.50	39	A	39	413	132	41	b	
	13		2.00	39	A	35	483	110	43		
	14		1.50	32	A	20	564	82	41		42
3- 2	13	M	2.00	42	A	45	475	116	39	b	
	13		1.80	39	A	36	512	103	45		
	14		1.50	37	A	33	563	87	46		43
3- 3	13	M	2.00	70	B	94	431	148	49	c	
	13		1.80	68	B	89	464	133	51		
	14		1.50	66	B	88	516	113	51		
	17	T	2.50	15	A	40	429	160	50	c	
	17		2.01	13	A	41	489	144	37		
	17		1.80	15	A	39	513	133	37		45
3- 4	12	M	2.50	67	B	95	357	177	45	c	
	13		2.00	65	B	84	436	141	42		
	14		1.49	61	B	86	518	113	44		44
3- 5	12	M	2.49	22	A	17	442	120	36	b	
	13		2.00	21	A	14	512	101	40		
	14		1.50	20	A	11	586	79	39		38
3- 6	13	M	2.00	27	A	19	497	103	39	b	
	13		1.80	28	A	19	526	95	40		
	14		1.50	26	A	17	578	81	44		
	17	T	2.50	38	B	—43	397	111	46	b	
	17		2.00	33	B	—52	472	92	49		
	17		1.80	33	B	—58	503	85	48		44
3- 7	13	M	2.00	50	B	64	455	130	38	b	
	13		1.80	47	B	61	488	119	40		
	14		1.50	49	B	60	537	101	39		39
3- 8	13	M	2.00	95	C	158	390	180	35	c	
	13		1.80	95	C	153	429	162	45		
	14		1.50	103	C	162	471	145	39		40
3- 9	12	M	2.49	72	B	112	343	193	34	b	
	13		2.00	69	B	104	424	158	32		
	14		1.50	61	B	97	511	122	36		
			Long method						50		37
3-10	13	M	2.00	40	A	96	451	156	14	p	
	13		1.80	41	A	93	480	141	14		
	14		1.50	35	A	86	540	119	19		
3-11	17	T	1.64	32	B	—24	519	92	36	d	
	18		1.50	27	B	—30	557	85	48		
	18		1.45	24	B	—40	564	82	38		38
3-12	13	M	1.68	78	C	109	463	130	30	d	
	13		1.58	78	C	114	479	125	34		
	16	T	2.49	21	A	15	428	123	50	c	
	17		2.01	19	A	13	495	110	44		
	18		1.50	21	A	7	566	89	46		
			Long method						51		40
3-13	13	M	2.00	53	B	39	460	106	25	c	
	13		1.80	54	B	40	489	98	27		
	14		1.50	51	8	41	537	87	23		
	18	T	1.37	25	B	75	562	114	40	c	
	19		1.35	27	B	70	564	112	42		
	19		1.33	26	B	62	567	109	39		33
3-14	12	M	2.50	37	A	18	420	113	40	c	
	13		1.99	36	A	10	490	92	45		
	14		1.50	28	A	—5	574	67	37		
	16	T	2.51	33	B	—30	401	114	40	b	
	17		2.00	33	B	—38	477	97	48		
	17		1.80	33	B	—44	502	90	43		43
3-15	16	T	2.50	38	B	—52	401	107	45	b	
	17		2.00	40	B	—52	463	94	47		
	17		1.80	40	B	—52	492	89	45		46
3-16	13	M	1.87	18	A	—24	547	71	41	d	
	13		1.76	18	A	—24	562	68	44		42
3-17	12	M	2.50	29	A	—10	448	92	53	b	
	13		2.00	28	A	—16	514	75	53		
	14		1.50	26	A	—20	591	58	54		
	18	T	1.37	71	C	12	507	95	25	c	
	18		1.35	72	C	13	514	95	29		
	19		1.27	70	C	14	528	89	29		42
3-18	12	M	2.50	31	A	—16	448	85	57	b	
	13		2.00	31	A	—18	515	72	59		
	14		1.50	27	A	—24	592	56	55		57
3-19	13	M	2.00	49	B	35	476	104	53	b	
	13		1.80	48	B	33	506	95	52		
	14		1.50	42	A	21	559	78	51		
	16	T	2.20	64	C	97	349	175	14	p	
	16		2.00	65	C	91	385	161	25		
	17		1.80	65	C	84	421	148	32		52
3-20	13	M	2.00	89	C	156	411	177	61	c	
	13		1.80	85	C	157	444	162	60		
	14		1.50	83	C	142	499	132	57		59
3-21	13	M	2.00	85	C	107	423	149	53	c	
	13		1.80	82	C	109	454	138	57		
	14		1.50	88	C	122	502	123	57		56
3-22	13	M	1.80	91	C	105	446	138	54	c	
	13		1.68	88	C	102	470	128	56		
	14		1.50	84	C	93	505	111	49		
	16	T	2.51	43	B	32	366	142	34	c	
	16		2.18	37	B	27	421	127	35		
	16		2.01	39	B	24	446	121	35		45
3-23	12	M	2.50	43	A	7	421	99	52	b	
	13		2.00	44	A	1	490	81	52		
	14		1.80	41	A	—1	513	76	46		51
3-24	12	M	2.52	71	B	57	370	133	41	c	
	13		2.00	68	B	50	445	109	38		
	14		1.50	57	B	26	542	74	44		
			Long method						41		41
3-25	12	M	2.51	55	B	23	404	104	43	b	
	13		2.20	54	B	22	443	96	42		
	14		2.01	53	B	23	469	91	39		41
3-26	12	M	2.50	30	A	—8	442	93	50	b	
	13		2.00	29	A	—11	509	79	48		
	13		1.80	27	A	—15	540	72	48		
	20	T	1.18	40	C	—36	594	64	42	d	
	20		1.18	47	C	—24	586	69	41		
	20		1.18	51	C	—8	577	77	38		45
3-27	12	M	2.51	31	A	18	428	116	43	b	
	13		2.00	29	A	12	497	97	50		
	14		1.50	25	A	7	581	75	50		
	16	T	2.50	68	D	34	356	122	35	c	
	16		2.00	80	D	40	417	109	45		
	16		1.90	78	D	37	437	103	44		45

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1947—Continued											
3–28	13	M	2.20	28	A	—5	479	89	48	b	
	13		2.01	29	A	—7	506	82	46		
	13		1.80	29	A	—10	537	75	50		48
3–29	12	M	2.50	25	A	—2	449	100	51	b	
	13		2.00	24	A	—7	516	84	47		
	14		1.50	23	A	—11	596	65	53		
	16	T	2.50	10	A	—4	453	114	35	b	
	16		2.00	10	A	—4	51B	100	36		
	17		1.50	12	A	—6	582	83	33		43
			Long method						41		
3–30	12	M	2.49	21	A	5	454	109	45	b	
	13		2.01	20	A	0	524	91	47		
	13		1.80	17	A	—5	556	B2	47		
	17	T	1.71	27	B	—28	526	92	52	c	
	17		1.60	30	8	—29	539	89	53		
	17		1.50	35	8	—21	551	90	57		50
3–31	12	M	2.51	30	A	21	432	120	46	b	
	13		2.01	30	A	16	498	99	43		
	14		1.51	28	A	14	579	78	54		
	16	T	2.50	28	8	134	387	181	5B	d	
	16		2.00	27	B	73	466	136	50		
	17		1.50	27	B	87	539	121	48		50
4– 5	12	M	2.50	21	A	—30	469	76	49	b	
	13		2.00	17	A	—36	537	64	43		
	13		1.80	17	A	—39	566	59	44		45
4– 6	12	M	2.51	41	A	—4	422	90	44	b	
	13		2.00	40	A	—9	491	75	48		
	13		1.80	41	A	—10	518	70	49		
	16	T	2.51	72	C	135	295	224	30	d	
	16		2.00	71	C	155	364	201	32		
	16		1.79	71	C	165	397	190	30		42
4– 8	13	M	1.80	44	A	2	507	77	41	c	
	14		1.65	41	A	1	534	71	43		
	14		1.50	42	A	0	558	66	45		43
4–11	15	T	2.50	35	8	231	356	229	59	d	
	16		2.01	38	B	228	423	195	52		
	17		1.44	37	B	198	531	148	53		52
4–12	15	T	2.51	23	A	90	384	222	58	d	
	16		2.00	23	A	90	456	188	57		
	17		1.50	23	A	86	535	152	53		54
4–13	15	T	2.51	37	8	5	384	129	31	d	
	16		2.00	38	B	—7	454	110	35		
	17		1.50	37	8	—34	538	86	41		38
4–14	13	M	2.50	39	A	0	428	96	52	b	
	13		2.00	37	A	—7	500	78	55		
	13		1.80	36	A	—11	529	71	52		
		T	Long method						47		53
4–15	15	T	2.50	47	C	45	353	149	22	d	
	16		2.19	47	C	42	396	136	26		
	16		2.00	48	C	43	423	130	25		26
4–16	13	M	2.49	42	A	—7	429	87	56	b	
	13		2.00	42	A	—10	491	74	54		
	14		1.50	42	A	—14	572	57	60		
	15	T	2.49	46	C	112	324	197	13	d	
	16		2.20	44	C	110	369	180	17		
	16		1.99	46	C	110	402	169	21		47
4–17	13	M	2.49	35	A	—17	443	B2	52	c	
	13		2.00	33	A	—23	509	68	49		
	14		1.50	30	A	—27	584	53	43		
			Long method						34		48
4–18	13	M	2.49	2B	A	—17	455	84	53	b	
	13		2.01	25	A	—22	519	72	49		
	13		1.81	25	A	—24	554	66	56		
	19	T	1.10	47	C	93	5B4	117	53	d	
	20		1.10	51	C	102	581	119	55		
	20		1.10	52	C	106	582	120	58		54
4–19	13	M	2.50	29	A	—10	445	92	50	b	
	13		2.00	29	A	—10	510	80	54		
	13		1.80	28	A	—14	539	72	49		
	15	T	2.50	5B	C	73	350	171	70	d	
	16		2.20	57	C	66	401	153	61		
	16		2.00	58	C	68	430	146	63		54
4–20	13	M	2.00	27	A	—30	518	65	50	d	
	14		1.50	17	A	—34	592	53	50		50
4–21	13	M	2.50	62	B	24	404	102	55	c	
	13		2.01	55	B	15	473	84	53		
	14		1.50	51	B	25	557	70	58		55
1947—Continued											
4–22	13	M	2.50	25	A	—28	464	76	57	b	
	13		2.00	26	A	—29	523	66	54		
	13		1.80	25	A	—32	551	61	53		55
4–23	13	M	2.49	15	A	—40	491	71	54	b	
	13		2.01	15	A	—40	546	62	51		
	13		1.80	15	A	—41	576	58	53		53
4–24	13	M	2.49	16	A	—30	478	79	49	b	
	13		2.00	15	A	—33	546	67	53		
	14		1.80	15	A	—34	577	62	55		52
4–25	13	M	2.51	18	A	—17	468	89	49	b	
	13		2.00	18	A	—20	534	76	51		
	14		1.80	18	A	—22	561	70	51		50
4–30	13	M	2.50	57	B	4	41B	82	55	c	
	13		2.20	52	B	—1	462	74	50		
	13		2.00	49	8	—3	489	69	52		52
5– 3	13	M	2.51	10	A	—39	503	73	52	b	
	13		2.21	11	A	—38	540	67	52		
	13		2.00	10	A	—41	563	63	57		54
5– 8	13	M	2.50	37	A	—1	430	96	48	b	
	13		2.21	37	A	—3	467	86	48		
	13		2.01	37	A	—5	498	79	54		50
5–11	13	M	2.51	37	A	—1	432	95	55	b	
	13		2.20	36	A	—8	473	82	54		
	13		2.00	36	A	—11	503	75	53		54
5–12	13	M	2.48	48	B	17	419	100	48	b	
	13		2.20	48	B	15	457	90	51		
	13		2.00	46	B	15	482	87	48		49
5–13	13	M	2.51	28	A	—20	458	82	47	c	
	13		2.20	24	A	—28	504	72	34		
	13		2.00	24	A	—29	529	67	40		44
5–14	13	M	2.49	18	A	—28	478	80	56	b	
	13		2.21	17	A	—30	515	73	48		
	13		2.00	17	A	—32	544	67	55		53
5–15	13	M	2.49	22	A	—21	465	85	50	b	
	13		2.20	20	A	—23	507	77	50		
	13		2.00	21	A	—23	531	72	53		51
5–16	16	T	1.50	59	C	259	449	207	53	d	
	16		1.44	56	C	254	466	197	52		
	17		1.39	60	C	253	477	192	55		52
5–17	15	T	2.51	41	B	182	345	208	44	d	
	15		2.00	38	8	153	435	167	50		
	16		1.50	37	B	133	534	108	51		48
5–18	13	M	2.50	26	A	—26	463	77	57	b	
	13		2.19	25	A	—30	503	70	53		
	14		2.00	25	A	—31	527	65	54		
	15	T	2.51	53	C	220	275	288	45	c	
	15		2.00	57	C	213	372	234	51		
	16		1.80	56	C	224	399	223	44		51
5–19	13	M	2.49	9	A	—40	511	73	53	b	
	14		2.00	10	A	—42	569	62	55		
	15		1.50	10	A	—42	634	51	51		
			Long method						39		53
5–21	13	M	2.49	11	A	—32	499	79	49	b	
	13		2.20	11	A	—33	534	72	47		
	14		2.00	12	A	—35	559	67	51		49
5–23	13	M	2.51	24	A	—25	459	80	51	b	
	13		2.20	23	A	—28	497	72	44		
	14		2.00	23	A	—29	526	67	50		48
5–24	13	M	2.51	18	A	—30	474	78	50	b	
	13		2.20	16	A	—32	514	71	43		
	14		2.00	17	A	—32	539	67	44		46
5–25	13	M	2.49	22	A	—29	466	78	50	b	
	13		2.20	22	A	—30	502	71	47		
	14		2.01	21	A	—31	532	66	52		50
5–26	13	M	2.49	16	A	—28	480	80	51	b	
	13		2.20	16	A	—28	516	74	47		
	14		2.01	16	A	—30	540	69	51		50
5–27	13	M	2.20	14	A	—34	522	71	43	c	
	13		2.00	14	A	—35	552	66	52		
	14		1.80	13	A	—38	580	61	51		49
5–28	13	M	2.51	10	A	—33	500	79	47	b	
	13		2.21	9	A	—36	537	71	44		
	14		2.00	9	A	—35	563	6B	45		
	15	T	2.50	53	C	29	379	137	66	d	
	15		2.20	55	C	25	417	126	63		
	15		2.00	58	C	18	442	116	59		49
6– 1	13	M	2.50	68	B	38	384	114	38	c	
	14		2.00	63	8	32	458	95	42		
	14		1.80	62	B	30	483	88	35		
1947—Continued											
6– 1	17	T	1.31	146	D	80	500	100	66	p	
	17		1.27	145	D	81	505	99	62		
	17		1.23	147	D	82	508	99	53		40
6– 2	13	M	2.50	44	A	5	418	98	46	b	
	14		2.00	42	A	0	486	82	47		
	14		1.81	42	A	—2	515	75	46		46
6– 3	13	M	2.51	19	A	—25	468	83	52	b	
	13		2.21	19	A	—26	509	75	52		
	14		2.00	19	A	—28	535	70	51		52
6– 4	13	M	2.20	21	A	—28	505	72	48	b	
	14		2.00	21	A	—30	533	67	52		
	14		1.80	21	A	—31	560	62	52		
	15	T	2.52	44	B	234	346	234	65	d	
	15		2.20	44	B	226	394	209	63		
	15		2.00	44	8	223	424	194	64		54
6– 6	13	M	2.49	10	A	—37	506	75	49	b	
	13		2.20	9	A	—39	541	69	49		
	14		2.00	9	A	—43	569	62	51		50
6– 7	13	M	2.50	23	A	—24	466	81	51	b	
	14		2.20	22	A	—26	500	74	46		
	14		2.01	22	A	—27	527	69	48		48
6– 8	13	M	2.50	37	A	4	42B	100	44	b	
	14		2.20	37	A	2	461	90	37		
	14		2.00	38	A	2	487	84	39		40
6– 9	13	M	2.50	53	8	29	396	112	34	c	
	14		2.20	50	8	28	437	104	32		
	14		2.00	53	B	32	461	100	34		
	15	T	2.50	76	C	—28	371	103	53	c	
	16		1.80	64	C	—25	480	86	56		
	16		1.51	62	C	—27	523	77	47		43
6–10	13	M	2.50	27	A	—12	449	91	49	b	
	14		2.20	29	A	—7	486	87	53		
	14		2.00	27	A	—12	515	79	51		
	15	T	2.51	96	D	62	329	146	47	d	
	15		2.00	93	D	61	404	128	35		
	16		1.49	87	D	43	494	96	32		45
6–11	13	M	2.50	35	A	—27	449	73	58	b	
	14		2.21	35	A	—26	487	68	58		
	14		2.00	33	A	—29	515	63	56		57
6–12	13	M	2.50	32	A	—28	453	74	57	c	
	14		2.20	31	A	—27	488	69	50		
	14		2.00	31	A	—27	519	65	59		
	15	T	2.50	46	B	292	325	262	46	c	
	15		2.00	44	B	285	411	216	50		
	16		1.50	42	B	300	495	176	47		51
6–13	13	M	2.51	26	A	—30	464	74	62	c	
	14		2.00	26	A	—32	527	63	54		
	14		1.80	25	A	—34	551	59	53		
	15	T	2.50	53	C	115	336	202	49	c	
	15		2.20	52	C	111	387	182	57		
	15		2.00	53	C	117	413	175	56		55
6–14	13	M	2.50	19	A	—32	474	76	52	b	
	14		2.00	21	A	—32	538	65	57		
	14		1.80	19	A	—37	567	60	52		54
6–16	13	M	2.51	21	A	—27	471	79	56	b	
	14		2.20	22	A	—26	505	74	50		
	14		2.00	21	A	—26	531	70	53		53
6–17	13	M	2.50	16	A	—35	485	74	54	b	
	14		2.00	20	A	—25	533	71	53		
	14		1.80	23	A	—25	555	66	53		53
6–18	16	M	1.52	13	A	—30	615	56	54	c	
	17		1.50	13	A	—32	621	54	54		
	17		1.48	13	A	—34	626	54	52		
	15	T	2.50	76	C	48	350	156	70	d	
	15		2.20	70	C	47	396	142	64		
	15		2.00	67	C	34	432	127	66		60
6–19	15	T	2.50	70	C	12	361	129	54	c	
	15		2.20	71	C	14	403	121	60		
	15		2.00	74	C	16	423	117	50		55
6–20	13	M	2.50	22	A	2	455	106	51	b	
	14		2.00	21	A	—6	525	85	51		
	14		1.81	22	A	—14	550	74	51		51
6–21	13	M	2.51	13	A	—27	485	82	47	b	
	14		2.00	13	A	—30	547	70	47		
	14		1.80	14	A	—30	574	66	51		48
6–22	15	T	2.49	75	C	144	310	230	67	p	
	15		2.20	77	C	162	352	222	72		
	15		2.00	73	C	171	387	211	77		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.	Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1947—Continued									
6–23 15	M	1.67	18	A −31	586	58	53	d	
15		1.63	18	A −29	590	58	51		
15		1.60	19	A −30	594	56	53		52
6–24 13	M	2.50	22	A −33	472	74	54	b	
14		2.00	19	A −37	542	63	56		
15		1.50	19	A −28	604	56	50		
		Long method					45		53
6–25 13	M	2.50	17	A −35	478	74	48	b	
14		2.20	17	A −35	518	68	51		
14		2.00	16	A −37	547	63	56		
15	T	2.49	54	C 186	305	258	47	d	
15		2.01	52	C 192	381	222	47		
16		1.80	51	C 198	421	206	59		52
6–26 13	M	2.51	13	A −39	495	72	56	b	
14		2.20	14	A −41	533	65	53		
14		2.00	13	A −40	558	62	55		
15	T	2.50	40	B 314	323	269	54	d	
15		2.00	36	B 271	417	209	55		
16		1.80	35	B 248	454	185	49		54
6–27 13	M	2.51	18	A −35	481	73	57	b	
14		2.20	19	A −36	519	67	55		
14		2.00	19	A −37	542	63	56		
15	T	2.50	47	C 27	377	135	52	c	
15		2.20	47	C 19	424	121	57		
15		2.00	51	C 15	446	113	52		55
6–28 13	M	2.51	28	A −29	457	74	56	a	
14		2.20	28	A −29	496	69	55		
14		2.00	28	A −29	525	65	57		
15	T	2.50	65	C −12	380	113	54	b	
15		2.00	65	C −15	446	97	48		
16		1.50	66	C −20	522	81	51		
		Long method					36		54
6–29 13	M	2.50	19	A −32	479	76	53	b	
14		2.00	17	A −35	542	65	50		
14		1.80	16	A −39	572	59	51		
15	T	2.49	64	C −30	386	100	62	c	
15		2.20	58	C −29	430	92	59		
15		2.00	56	C −30	457	87	56		54
6–30 13	M	2.49	11	A −37	499	74	52	c	
14		2.20	11	A −38	534	67	46		
14		2.00	10	A −41	562	63	48		
15	T	2.50	34	B −22	414	117	64	c	
15		2.00	35	B −41	478	97	51		
16		1.80	35	B −49	512	89	58		53
7–1 13	M	2.50	12	A −33	494	78	47	b	
14		2.20	12	A −33	530	72	45		
14		2.00	12	A −31	553	70	46		
15	T	2.50	43	B −61	397	104	49	b	
15		2.00	39	B −66	471	89	45		
16		1.80	38	B −68	504	83	50		47
7–2 13	M	2.49	14	A −34	489	76	49	b	
14		2.20	15	A −34	524	70	50		
14		2.00	15	A −36	549	65	52		
15	T	2.51	75	C −34	368	100	44	b	
15		1.99	69	C −34	442	86	43		
16		1.80	71	C −40	471	80	47		47
7–3 14	M	2.21	27	A −11	486	85	47	b	
14		2.20	26	A −12	514	79	49		
14		1.80	26	A −16	543	71	51		
15	T	2.50	94	D 35	348	111	46	c	
15		2.00	91	D 32	420	95	45		
16		1.50	93	D 26	501	75	43		47
7–4 14	M	2.00	14	A −35	548	66	49	c	
14		1.80	14	A −38	575	61	45		
15		1.50	16	A −30	613	55	48		
15	T	2.49	21	A 4	438	114	62	b	
15		2.00	23	A 3	500	98	59		
16		1.50	23	A −3	575	80	57		55
7–5 13	M	2.49	9	A −42	508	72	45	c	
14		2.01	8	A −41	570	63	53		
14		1.80	8	A −44	598	58	47		
15	T	2.50	26	B −75	435	94	57	b	
15		2.00	26	B −78	499	82	56		
16		1.50	28	B −95	571	67	56		52
7–6 13	M	2.49	27	A −28	460	76	55	b	
14		2.20	28	A −28	497	70	57		
14		2.00	28	A −28	520	66	60		57
7–7 16	T	1.48	102	D 54	481	99	41	d	
17		1.42	98	D 51	493	97	32		
17		1.32	100	D 47	516	89	36		36
7–8 15	M	1.64	47	B 10	533	71	43	d	
15		1.55	47	B 15	545	71	44		
15		1.49	45	B 11	549	67	35		
15	T	2.50	35	B 55	389	149	62	c	
15		2.00	31	B 35	468	123	58		
16		1.80	33	B 26	499	113	60		50
7–9 13	M	2.50	14	A −24	488	86	54	c	
14		2.21	13	A −31	528	73	55		
16		1.47	11	A −35	633	53	51		
15	T	2.50	23	A 17	430	127	63	c	
15		2.00	16	A 12	502	112	50		
16		1.80	19	A 15	538	106	54		54
7–10 13	M	2.50	15	A −34	491	75	62	c	
14		2.21	13	A −36	530	69	57		
14		2.00	13	A −38	556	64	52		
15	T	2.50	25	B −20	425	117	58	c	
15		2.00	26	B −27	494	100	57		
16		1.50	27	B −63	566	76	55		57
7–11 15	T	2.50	19	A 20	422	133	39	b	
15		2.00	21	A 17	486	113	46		
16		1.80	23	A 13	515	102	47		44
7–12 13	M	2.50	10	A −36	506	76	54	b	
14		2.21	9	A −39	544	69	52		
14		2.00	9	A −38	569	66	52		
15	T	2.50	19	A 11	431	123	48	b	
15		2.20	19	A 9	468	112	46		
15		2.00	19	A 6	500	103	50		50
7–13 15	T	2.50	21	A −3	435	106	52	b	
15		2.21	21	A −3	472	98	51		
15		2.00	21	A −6	504	90	56		53
7–14 15	T	2.50	24	A −6	434	99	56	b	
15		2.01	22	A −7	500	88	51		
16		1.80	22	A −7	532	83	53		53
7–15 13	M	2.50	37	A −21	440	76	53	b	
14		2.20	36	A −25	480	69	51		
14		2.00	35	A −26	507	65	51		
15	T	2.50	37	B 27	389	138	49	c	
15		2.20	34	B 20	435	124	45		
15		2.00	37	B 33	457	124	47		50
7–16 15	T	2.50	35	B 55	378	149	38	c	
15		2.20	35	B 55	421	138	39		
15		2.01	35	B 55	447	131	35		37
7–18 15	M	1.60	36	A −10	551	64	40	c	
15		1.56	32	A −11	563	64	42		
15		1.50	32	A −10	572	63	41		
15	T	2.49	51	C 89	332	181	24	c	
15		2.20	47	C 87	381	165	28		
15		2.00	47	C 85	411	155	29		34
7–19 13	M	2.49	39	A −1	426	94	46	b	
14		2.00	38	A −5	494	80	45		
14		1.80	35	A −9	524	73	45		
15	T	2.00	19	A 4	492	101	38	b	
16		1.80	21	A 1	520	92	42		
16		1.68	23	A 3	534	89	41		43
7–20 13	M	2.50	53	B 41	390	124	33	c	
13		2.20	53	B 40	430	114	35		
14		2.00	52	B 38	458	105	32		33
7–22 15	T	2.49	83	D 33	350	114	39	c	
15		2.20	81	D 31	393	103	39		
15		2.00	81	D 32	423	99	45		41
7–23 15	T	2.50	23	A −9	431	97	45	b	
15		2.20	23	A −9	473	91	50		
15		2.00	21	A −9	503	87	54		50
7–24 15	T	2.50	23	A −6	431	101	45	b	
15		2.00	22	A −4	499	91	46		
16		1.50	27	A −6	560	74	44		45
		Long method					47		
7–25 15	T	2.51	73	C −17	361	111	40	c	
15		2.20	70	C −16	405	102	47		
16		2.00	71	C −18	434	96	43		43
7–26 13	M	2.50	14	A −34	486	76	49	b	
14		2.00	13	A −39	551	63	45		
14		1.80	11	A −42	588	58	47		
15	T	2.50	58	C −29	381	99	41	b	
15		2.20	61	C −31	421	92	46		
16		2.00	62	C −32	445	86	43		45
7–27 13	M	2.50	4	A −39	529	77	46	b	
14		1.99	3	A −41	593	65	51		
14		1.80	2	A −41	617	62	52		
15	T	2.50	86	D 47	331	130	29	d	
16		2.00	86	D 46	404	113	31		
16		1.80	90	D 45	438	105	34		45
7–28 13	M	2.49	14	A −28	487	82	49	c	
14		1.99	13	A −31	550	69	47		
14		1.80	12	A −34	584	64	54		50
7–30 15	M	1.48	14	A −37	620	52	47	d	
15		1.45	14	A −32	624	54	50		48
7–31 13	M	2.49	28	A −24	455	79	52	b	
13		2.20	28	A −25	496	72	52		
14		2.00	25	A −28	525	67	49		51
8–1 13	M	2.49	13	A −34	491	77	46	b	
14		2.00	12	A −37	555	65	50		
14		1.80	11	A −38	585	61	50		49
8–2 13	M	2.49	9	A −37	501	76	44	b	
14		2.00	9	A −38	566	66	49		
14		1.79	9	A −40	593	61	45		46
8–3 13	M	2.50	11	A −19	492	91	47	c	
14		2.00	10	A −22	558	77	53		
15		1.80	11	A −21	584	71	54		
15	T	2.50	84	D 53	336	139	44	c	
16		2.00	82	D 37	422	105	47		
16		1.80	80	D 32	453	95	41		48
8–4 13	M	2.50	28	A 5	434	105	30	p	
14		2.00	28	A 5	501	91	33		
14		1.80	28	A 2	527	83	33		
8–5 15	T	2.50	88	D 74	321	166	51	d	
15		2.20	93	D 82	353	162	46		
16		2.00	100	D 88	377	157	44		46
8–11 13	M	2.50	8	A −40	510	73	41	c	
13		2.00	8	A −43	575	62	50		
15		1.50	7	A −44	640	50	47		46
		Long method					42		
8–12 13	M	1.99	7	A −41	571	64	43	b	
14		1.80	7	A −44	598	59	46		
14		1.67	7	A −41	615	56	46		
15	T	2.49	92	D 25	358	97	48	c	
15		2.20	90	D 23	400	88	45		
16		2.00	85	D 19	433	82	48		46
8–13 13	M	2.50	20	A −24	466	83	40	b	
13		2.00	20	A −24	526	72	47		
14		1.80	19	A −26	558	67	45		
15	T	2.50	83	D 18	367	92	50	c	
15		2.19	83	D 17	410	85	49		
16		2.01	91	D 20	432	80	50		47
8–14 13	M	2.50	11	A −35	494	76	46	b	
13		2.00	10	A −42	561	62	44		
14		1.80	10	A −43	588	58	46		
15	T	2.49	59	C −33	386	96	47	b	
16		2.00	54	C −32	456	85	49		
16		1.80	53	C −39	490	77	53		47
8–15 13	M	2.50	9	A −42	509	74	45	b	
13		2.00	9	A −40	569	64	50		
14		1.80	9	A −43	599	58	56		
17	T	1.40	63	C −41	538	68	43	d	
17		1.35	61	C −42	554	66	50		
17		1.29	61	C −45	562	63	45		48
8–16 13	M	2.50	9	A −26	502	86	47	c	
13		2.00	8	A −26	566	75	49		
14		1.80	8	A −24	596	71	55		50
8–17 13	M	2.51	12	A 58	458	162	43	d	
13		2.00	13	A 57	521	137	34		
14		1.80	12	A 59	553	128	42		40
8–18 14	M	1.60	42	A 112	511	143	15	p	
14		1.54	40	A 113	520	138	17		
14		1.49	42	A 111	531	136	15		
15	T	2.50	109	D 73	310	154	50	d	
16		2.19	115	D 76	352	142	49		
16		2.01	115	D 76	383	134	51		50
8–19 15	T	2.51	83	D 49	343	133	47	c	
16		2.20	86	D 53	378	128	46		
16		2.00	96	D 61	401	126	52		48
8–20 15	T	2.50	33	B −86	420	90	45	c	
16		2.19	36	B −96	458	82	51		
16		2.01	37	B −96	486	78	55		50

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1947—Continued											
8–21	13	M	2.51	61	B	49	375	129	24	p	
	13		1.99	59	B	46	446	110	23		
	14		1.80	60	B	46	474	101	24		
	15	T	2.49	13	A	−13	465	100	60	c	
	15		2.00	14	A	−14	520	86	53		
	16		1.80	15	A	−14	547	81	54		56
8–22	15	T	2.51	38	8	−74	408	97	43	b	
	16		2.00	40	B	−75	474	86	50		
	17		1.50	43	B	−69	538	77	49		
			Long method						37		47
8–23	15	T	2.51	32	B	−74	421	95	54	b	
	16		2.00	30	B	−76	492	83	53		
	16		1.79	31	B	−77	517	79	52		53
8–24	13	M	2.50	51	B	13	420	94	51	c	
	13		2.00	48	B	7	485	79	48		
	14		1.80	50	B	8	511	74	47		
	15	T	2.50	22	A	−10	437	96	50	b	
	16		2.01	24	A	−10	499	84	53		
	16		1.80	24	A	−11	526	79	52		51
8–25	13	M	2.50	25	A	−15	456	88	51	c	
	13		2.00	27	A	−19	516	74	49		
	13		1.80	28	A	−20	542	68	48		49
8–26	15	T	2.50	39	8	−27	389	117	46	b	
	16		2.19	42	B	−31	432	107	46		
	16		2.00	40	B	−33	465	101	47		46
8–27	15	T	2.50	23	A	−12	443	92	58	b	
	16		2.19	23	A	−14	486	84	62		
	16		2.01	22	A	−15	508	80	54		58
8–28	15	T	2.49	29	B	−79	434	92	60	b	
	16		2.20	27	B	−84	469	84	53		
	16		2.00	28	B	−84	497	80	55		56
8–29	13	M	2.50	31	A	−18	450	83	52	c	
	13		1.80	30	A	−25	546	64	55		
	14		1.66	30	A	−22	566	60	53		
	15	T	2.50	29	B	−87	428	89	51	b	
	16		2.20	28	B	−90	465	82	46		
	16		2.00	28	B	−92	499	77	53		51
8–30	13	M	2.50	44	A	14	417	115	46	c	
	13		2.00	39	A	18	487	97	46		
	13		1.79	34	A	12	527	84	49		
	15	T	2.50	11	A	−21	471	92	50	b	
	16		2.01	11	A	−22	534	80	51		
	17		1.50	13	A	−22	590	69	44		
			Long method						66		48
8–31	13	M	2.50	22	A	−9	457	96	47	c	
	13		1.99	20	A	−15	526	79	42		
	13		1.80	20	A	−16	554	73	45		45
9–3	12	M	2.49	40	A	0	433	94	58	b	
	13		1.99	36	A	−4	502	81	54		
	13		1.79	37	A	−5	531	72	57		56
9–4	14	M	1.51	23	A	−6	588	68	44	c	
	14		1.46	25	A	−7	596	65	46		
	14		1.41	24	A	−8	607	63	49		
	15	T	2.50	96	D	37	338	112	32	d	
	16		2.00	101	D	42	402	101	31		
	16		1.80	100	D	41	429	96	24		45
9–5	14	M	1.68	31	A	4	549	78	46	c	
	14		1.61	30	A	1	564	75	48		
	14		1.53	30	A	4	573	73	44		46
9–6	16	T	2.20	53	C	−11	417	103	34	c	
	16		2.00	52	C	−17	450	94	43		
	16		1.80	50	C	−26	484	83	45		41
9–7	15	T	2.50	57	C	−11	376	112	40	d	
	16		2.19	64	C	−14	411	103	42		
	16		2.00	48	C	−1	447	103	43		42
9–8	12	M	2.50	36	A	0	436	97	54	c	
	13		2.01	30	A	−13	507	77	49		
	13		1.80	31	A	−13	540	71	55		53
9–9	12	M	2.49	25	A	−14	455	90	43	b	
	13		2.00	25	A	−15	520	77	46		
	14		1.50	24	A	−16	591	62	44		
			Long method						45		
	15	T	2.50	70	D	24	377	107	51	c	
	16		2.00	81	D	25	435	91	48		
	17		1.50	93	D	25	500	78	38		
			Long method						38		45
9–10	13	M	1.80	17	A	−38	573	60	53	c	
	13		1.63	17	A	−32	594	56	48		
	14		1.50	17	A	−34	612	53	48		
9–10	17	T	1.61	79	D	49	472	107	43	c	
	17		1.50	81	D	50	491	104	43		
	17		1.44	81	D	50	497	103	37		46
9–11	15	T	2.50	103	D	115	277	220	44	d	
	16		2.20	105	D	117	322	203	42		
	16		2.00	100	D	116	354	191	37		41
9–12	15	T	2.50	45	8	−49	394	110	47	b	
	16		2.20	45	B	−49	435	102	46		
	16		2.01	46	B	−49	457	97	48		47
9–13	16	T	2.49	42	B	−25	392	118	50	c	
	16		2.19	45	B	−12	424	116	46		
	16		2.00	44	B	−20	450	107	44		47
9–16	14	M	1.31	52	8	34	580	73	47	p	
	14		1.27	46	B	28	587	69	40		
	15		1.24	50	B	29	592	67	45		
9–17	12	M	2.52	35	A	−1	430	95	48	c	
	13		2.00	31	A	−9	505	79	47		
	13		1.80	33	A	−10	534	73	50		48
9–18	13	M	2.00	14	A	−29	549	71	50	b	
	13		1.80	13	A	−31	576	65	54		
	14		1.50	13	A	−29	621	57	53		
	16	T	2.51	14	A	−10	461	102	55	b	
	16		2.20	14	A	−12	501	93	61		
	16		2.00	14	A	−14	525	86	54		54
9–19	12	M	2.49	7	A	−41	524	73	57	c	
	13		2.00	6	A	−43	576	63	47		
	14		1.50	5	A	−39	649	53	55		
	16	T	2.50	19	A	−18	438	88	53	b	
	16		2.20	19	A	−18	489	82	54		
	16		2.00	19	A	−19	515	77	53		54
9–20	12	M	2.49	8	A	−34	514	79	53	b	
	13		1.99	8	A	−35	574	68	53		
	13		1.80	7	A	−37	602	63	54		53
9–24	14	M	1.35	34	A	3	598	64	48	d	
	14		1.31	33	A	8	602	66	47		
	14		1.28	33	A	10	605	65	42		46
9–25	12	M	2.49	26	A	−4	450	98	47	b	
	13		2.00	22	A	−9	520	83	46		
	13		1.80	19	A	−15	555	75	48		
	16	T	2.50	56	C	5	378	123	34	c	
	16		2.20	55	C	1	412	111	38		
	16		2.00	57	C	−2	441	104	42		43
9–28	12	M	2.51	75	B	28	393	100	50	d	
	12		2.20	72	B	24	437	88	48		
	13		1.73	69	8	18	505	72	44		47
9–29	14	M	1.38	73	B	40	553	73	46	d	
	14		1.34	73	B	38	561	70	48		
	14		1.30	70	B	37	569	68	45		
	16	T	2.21	76	C	−11	394	106	43	c	
	17		1.81	75	C	−9	453	97	41		44
9–30	16	T	2.50	15	A	−19	466	90	57	c	
	16		2.00	16	A	−20	519	79	51		
	17		1.50	25	A	−19	576	65	50		
			Long method						34		50
10–1	12	M	2.50	31	A	−20	451	81	56	b	
	12		2.00	27	A	−28	521	67	53		
	13		1.50	26	A	−23	593	56	53		
	16	T	2.52	32	8	−49	420	106	57	b	
	16		2.21	34	B	−50	460	98	58		
	16		2.00	34	8	−53	485	92	59		56
10–2	12	M	2.50	20	A	−27	474	80	54	b	
	12		2.00	20	A	−29	537	68	54		
	13		1.50	18	A	−31	608	54	51		
	16	T	2.09	37	B	−48	466	98	50	c	
	16		1.98	37	B	−46	478	95	54		
	17		1.81	36	B	−51	504	89	46		52
10–3	12	M	2.51	17	A	−29	479	80	49	b	
	12		2.00	17	A	−32	545	67	49		
	13		1.50	17	A	−29	613	56	48		
			Long method						43		
	16	T	2.50	98	D	79	307	168	37	c	
	16		2.19	96	D	75	355	150	39		
	16		2.00	98	D	70	386	136	33		44
10–4	12	M	2.51	22	A	−27	465	79	47	b	
	12		2.00	22	A	−27	531	69	52		
	13		1.50	20	A	−28	602	55	49		
	16	T	2.50	107	D	67	316	145	42	d	
	16		2.20	108	D	65	364	131	49		
	17		1.80	101	D	63	425	120	43		47
10–6	12	M	2.50	33	A	−11	441	88	48	b	
	12		1.99	31	A	−17	513	73	51		
	13		1.50	29	A	−20	585	58	48		49
10–7	12	M	2.50	35	A	−13	435	86	46	b	
	12		2.01	34	A	−15	501	73	48		
	13		1.50	32	A	−20	581	57	49		48
10–8	12	M	2.50	11	A	−31	496	80	46	a	
	12		2.00	9	A	−37	560	67	44		
	13		1.50	9	A	−37	632	54	49		
	16	T	2.47	37	8	−71	425	97	62	c	
	16		2.20	37	8	−79	457	88	50		
	16		2.00	39	8	−86	485	82	55		48
10–9	12	M	2.51	16	A	−2	469	104	48	c	
	12		2.00	15	A	−8	540	86	53		
	13		1.79	15	A	−12	565	78	46		
	16	T	2.50	72	C	−34	381	98	55	c	
	16		2.20	70	C	−32	419	92	51		
	16		2.00	65	C	−33	452	86	51		50
10–10	12	M	2.50	18	A	−20	471	87	53	b	
	12		2.00	18	A	−24	537	73	52		
	13		1.50	17	A	−23	608	59	51		52
10–11	12	M	2.00	22	A	15	515	102	48	c	
	13		1.80	22	A	13	542	93	48		
	13		1.68	20	A	11	561	87	42		
	16	T	2.50	62	C	−30	392	99	62	p	
	16		2.21	54	C	−30	440	91	65		
	17		2.00	52	C	−31	474	86	69		46
10–12	12	M	2.50	21	A	21	451	123	48	b	
	12		2.00	20	A	16	521	103	52		
	13		1.50	18	A	13	595	81	47		49
10–14	13	M	2.51	44	A	17	413	109	46	d	
	13		2.00	39	A	5	495	87	55		
	13		1.50	39	A	4	566	69	52		51
10–15	12	M	2.50	33	A	−5	439	94	52	c	
	12		2.00	31	A	−8	507	80	53		
	13		1.50	29	A	−13	578	66	46		
	16	T	2.50	75	C	−49	396	88	58	c	
	16		2.20	75	C	−50	426	81	57		
	17		2.01	75	C	−50	451	77	55		53
10–16	12	M	2.50	39	A	8	424	103	47	b	
	12		1.99	38	A	4	497	86	49		
	13		1.50	38	A	4	571	69	50		
			Long method						55		
	16	T	2.50	79	D	17	382	92	61	d	
	16		2.20	80	D	16	421	85	62		
	17		2.00	83	D	17	436	81	57		50
10–17	12	M	2.51	38	A	17	420	111	46	c	
	12		2.00	39	A	13	489	93	49		
	13		1.50	39	A	8	568	71	52		
	16	T	2.50	53	C	−37	402	92	57	c	
	16		2.20	53	C	−39	444	85	62		
	17		2.00	60	C	−39	466	82	59		54
10–18	12	M	2.49	34	A	−2	444	96	57	c	
	12		2.00	33	A	−10	512	78	60		
	13		1.50	31	A	−8	584	64	57		
	16	T	2.51	65	C	−46	390	87	58	c	
	16		2.20	65	C	−48	431	81	50		
	17		2.00	62	C	−49	459	76	51		55
10–19	16	T	2.49	56	C	−28	390	100	47	c	
	16		2.20	59	C	−28	425	93	44		
	17		2.00	61	C	−29	453	88	51		47
10–21	17	T	2.20	8	A	−6	517	104	50	b	
	17		2.00	8	A	−9	543	96	50		
	17		1.80	8	A	−10	574	90	53		51
10–22	16	T	2.51	67	C	−40	392	92	60	c	
	17		2.21	65	C	−45	435	83	57		
	17		2.01	64	C	−50	459	78	52		56
10–23	12	M	2.50	44	A	8	426	101	60	b	
	12		2.00	43	A	8	491	87	57		
	13		1.50	38	A	−5	572	63	57		58
10–24	12	M	2.51	11	A	−35	500	78	59	b	
	12		1.99	10	A	−39	563	64	53		
	13		1.50	9	A	−38	637	53	57		56
10–25	12	M	1.99	12	A	−32	558	69	54	b	
	12		1.79	12	A	−34	580	64	48		
	13		1.50	12	A	−31	623	56	49		
	16	T	2.50	67	C	−44	390	90	54	c	
	17		2.20	66	C	−45	431	83	54		
	17		2.00	66	C	−48	458	77	52		51

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1947—Continued											
10–26	16	T	2.50	92	D	21	371	91	60	c	
	17		2.20	94	D	21	409	84	52		
	17		2.01	95	D	22	436	81	55		56
10–27	13	M	1.44	22	A	65	591	106	43	d	
	13		1.39	21	A	66	600	104	44		
	13		1.34	20	A	60	613	98	51		
	16	T	2.50	97	D	29	360	100	54	d	
	17		2.20	95	D	26	403	89	51		49
10–28	12	M	2.51	12	A	—26	499	85	63	b	
	12		2.00	11	A	—31	563	70	60		
	12		1.80	11	A	—32	589	65	60		61
10–29	13	M	1.51	34	A	24	571	83	53	c	
	13		1.45	32	A	18	586	77	57		
	13		1.40	29	A	16	600	75	57		56
10–30	16	T	2.50	26	B	—80	445	91	61	c	
	17		2.00	28	B	—90	506	78	60		
	19		1.50	43	8	—103	553	68	55		
			Long method						48		54
10–31	12	M	2.50	30	A	22	441	121	60	c	
	12		1.99	27	A	15	512	100	56		
	13		1.50	26	A	9	587	76	55		
	16	T	2.50	56	C	—40	403	91	57	c	
	17		2.20	55	C	—42	442	83	51		
	17		2.00	57	C	—43	469	79	57		56
11– 1	12	M	2.49	29	A	13	442	114	56	c	
	12		2.00	27	A	10	511	96	56		
	13		1.50	27	A	4	585	73	53		
	16	T	2.50	30	B	—88	439	89	59	b	
	17		2.20	29	B	—87	475	83	55		
	17		2.00	26	B	—86	502	79	56		56
11– 2	12	M	2.51	24	A	19	453	121	61	c	
	12		2.00	21	A	7	526	95	59		
	13		1.50	17	A	—4	607	71	57		
	16	T	2.50	31	B	—77	430	94	66	c	
	17		2.20	31	B	—80	470	86	66		
	17		2.00	33	B	—86	495	80	55		60
11– 4	17	T	2.50	19	A	—19	460	86	62	c	
	17		2.20	19	A	—21	496	79	56		
	17		2.00	20	A	—23	522	73	56		58
11– 5	12	M	2.49	20	A	—1	465	110	56	b	
	12		2.00	18	A	—5	532	87	54		
	13		1.50	18	A	—9	610	67	60		
	17	T	2.51	10	A	—23	486	90	57	b	
	17		2.20	9	A	—25	525	83	56		
	17		2.00	9	A	—26	548	78	57		57
11– 6	12	M	2.51	15	A	—16	478	92	60	b	
	12		2.00	14	A	—21	549	77	62		
	13		1.50	13	A	—23	624	60	60		
	17	T	2.50	28	B	—84	433	90	53	b	
	17		2.20	29	B	—87	471	83	53		
	17		2.00	31	B	—94	499	77	54		57
11– 7	12	M	2.51	36	A	57	410	150	44	d	
	12		2.00	40	A	54	477	124	39		
	13		1.50	36	A	59	559	103	41		
	17	T	2.51	25	A	—4	434	101	54	b	
	17		2.20	25	A	—8	471	90	48		
	17		2.00	25	A	—12	499	81	50		46
11– 8	12	M	2.50	29	A	0	447	102	61	b	
	12		1.99	29	A	—2	517	86	63		
	13		1.50	25	A	—6	591	67	59		61
11– 9	12	M	2.50	35	A	35	429	131	60	c	
	12		1.99	33	A	32	498	110	53		
	13		1.50	32	A	32	572	89	50		54
11–10	12	M	2.50	24	A	—54	439	153	56	c	
	12		1.99	24	A	—55	505	132	49		
	13		1.50	22	A	—51	581	102	48		
	17	T	2.50	26	B	—89	439	88	53	b	
	17		2.20	27	B	—92	474	81	53		
	17		2.00	32	B	—97	492	76	50		52
11–11	12	M	2.50	21	A	—1	461	103	54	b	
	12		1.80	18	A	—11	559	78	51		
	13		1.50	16	A	—10	607	67	51		
	18	T	1.78	17	A	3	534	96	46	c	
	18		1.72	16	A	2	548	94	46		
	19		1.67	16	A	3	553	94	44		50
11–12	12	M	2.51	21	A	1	460	105	60	b	
	12		2.00	20	A	—6	529	86	58		
	13		1.50	19	A	—8	602	68	56		58
1947—Continued											
11–13	12	M	2.51	27	A	61	429	158	53	c	
	12		2.00	25	A	52	502	129	48		
	13		1.50	24	A	51	577	102	45		
	17	T	2.50	21	A	1	430	110	43	b	
	17		2.20	22	A	1	468	101	44		
	17		2.00	21	A	0	498	96	47		
			Long method						61		47
11–15	13	M	1.38	19	A	11	617	74	53	c	
	13		1.33	19	A	13	625	73	53		
	14		1.29	20	A	15	629	72	50		52
11–16	12	M	2.50	26	A	10	445	111	51	b	
	12		2.00	25	A	4	518	92	57		
	13		1.80	23	A	1	546	84	51		53
11–17	12	M	2.50	26	A	13	448	114	54	b	
	12		2.00	24	A	10	515	97	50		
	13		1.50	23	A	5	592	74	52		
			Long method						42		
	17	T	2.50	62	C	—45	397	88	52	c	
	17		2.20	61	C	—49	436	80	55		
	18		2.00	60	C	—51	462	75	52		
			Long method						42		52
11–18	13	M	1.36	30	A	22	600	77	50	c	
	14		1.29	30	A	22	610	74	49		
	14		1.25	32	A	25	617	72	50		
	17	T	2.51	34	B	—72	420	96	56	c	
	18		2.00	31	B	—68	482	86	49		
	18		1.92	32	B	—69	497	84	51		51
11–20	11	M	2.50	33	A	16	436	114	58	c	
	12		1.B0	30	A	5	535	85	51		
	13		1.50	30	A	5	578	73	51		
	17	T	2.50	14	A	—12	463	100	62	c	
	17		2.21	14	A	—11	493	94	50		
	18		2.00	19	A	—13	510	84	49		53
11–21	11	M	2.52	36	A	41	421	135	53	b	
	12		2.00	34	A	35	495	112	50		
	13		1.50	32	A	37	569	92	47		50
11–23	11	M	2.51	62	B	40	394	120	52	c	
	12		1.99	60	B	35	466	99	50		
	12		1.80	59	B	35	503	92	59		
	17	T	2.49	17	A	—11	451	98	54	b	
	17		2.20	17	A	—12	487	91	51		
	18		2.00	18	A	—12	509	85	51		53
11–24	12	M	2.00	33	A	25	497	105	55	d	
	12		1.80	32	A	20	529	95	52		
	13		1.50	28	A	14	576	78	48		
	17	T	2.50	58	C	—44	399	88	50	c	
	17		2.20	61	C	—49	437	80	60		
	18		2.00	62	C	—50	462	75	55		54
11–25	17	T	2.50	63	C	—46	394	87	53	c	
	17		2.20	61	C	—49	435	B0	49		
	18		2.00	60	C	—51	461	75	50		51
11–26	17	T	2.50	62	C	—47	394	86	50	b	
	17		2.20	61	C	—50	434	79	51		
	18		2.00	60	C	—54	459	73	49		50
			Long method						64		
11–30	12	M	1.80	91	C	210	423	191	49	d	
	12		1.67	96	C	208	447	179	4B		
	13		1.50	B8	C	207	480	162	45		47
12– 3	13	M	1.67	92	C	126	462	140	45	c	
	13		1.59	90	C	131	477	135	49		
	13		1.51	92	C	130	491	130	48		47
12– 4	12	M	2.00	73	B	76	436	131	48	c	
	12		1.80	68	B	72	471	119	47		
	13		1.50	70	B	71	520	101	45		47
12– 5	12	M	1.80	78	C	67	470	116	55	c	
	13		1.65	77	C	68	496	10B	55		
	13		1.50	78	C	67	518	100	50		53
12– 6	17	T	2.49	34	B	—44	421	10B	65	b	
	17		2.19	37	B	—46	453	99	61		
	18		2.00	37	B	—48	479	95	60		62
12– 7	18	T	2.20	13	A	—12	505	94	60	d	
	18		2.00	12	A	—12	530	B9	55		58
12– 9	17	T	2.50	17	A	—15	460	93	58	b	
	1B		2.20	18	A	—14	494	87	54		
	18		2.00	17	A	—17	521	81	53		55
12–10	12	M	1.80	66	B	123	458	161	55	c	
	13		1.64	63	B	119	490	148	54		
	13		1.50	63	B	117	514	136	52		54
1947—Continued											
12–11	12	M	1.80	76	C	188	444	177	61	d	
	13		1.64	80	C	183	474	162	56		
	13		1.50	71	B	131	503	144	53		57
12–13	13	M	1.55	64	B	119	507	141	59	c	
	13		1.48	63	B	117	519	134	59		
	13		1.42	58	B	110	535	126	53		
	17	T	2.50	20	A	32	435	147	69	p	
	18		2.20	19	A	11	473	114	55		
	18		2.01	19	A	6	508	103	58		57
12–14	12	M	2.00	41	A	80	468	143	36	c	
	12		1.80	39	A	75	501	130	41		
	13		1.50	37	A	72	559	109	39		39
12–19	12	M	2.50	50	B	56	405	142	63	d	
	12		2.00	46	B	44	478	113	55		
	13		1.50	43	A	35	560	86	50		56
12–20	12	M	1.99	46	B	67	475	134	62	p	
	12		1.81	41	A	64	508	121	52		
	13		1.50	40	A	63	555	104	46		
12–21	12	M	2.00	32	A	70	489	140	50	c	
	12		1.80	33	A	62	519	123	50		
	13		1.50	34	A	64	563	106	44		48
12–23	18	T	2.50	20	A	32	429	147	61	d	
	18		2.19	26	A	28	464	127	63		
	19		2.00	24	A	13	490	108	54		59
12–24	12	M	2.00	56	B	118	441	176	58	c	
	12		1.80	54	B	102	479	150	55		
	13		1.50	58	B	108	528	131	61		
	18	T	2.49	44	B	55	388	152	72	d	
	18		2.20	44	B	24	431	129	66		
	19		2.00	49	B	—3	457	115	62		60
12–25	12	M	2.00	56	B	60	457	124	50	b	
	12		1.80	56	B	5B	488	113	51		
	13		1.50	56	B	59	536	9B	50		50
12–26	18	T	2.50	26	B	—5	425	123	62	c	
	18		2.20	26	B	12	464	120	65		
	19		2.00	28	B	14	485	115	63		63
12–27	18	T	2.50	22	A	—7	445	100	59	b	
	18		2.20	22	A	—6	476	94	59		
	19		2.00	23	A	—8	505	87	53		
			Long method						56		57
12–28	14	M	1.28	52	B	64	578	88	46	d	
	14		1.26	53	B	70	583	89	47		
	14		1.20	52	B	69	590	86	45		46
12–31	18	T	2.50	18	A	—6	452	103	58	b	
	18		2.20	20	A	—8	485	93	55		
	19		2.00	20	A	—9	509	87	55		56
1948											
1– 1	18	T	2.13	53	C	—22	447	95	57	c	
	18		2.06	50	C	—21	457	93	53		
	19		2.00	50	C	—23	467	90	53		54
1– 2	18	T	2.50	93	D	20	370	89	53	c	
	18		2.20	94	D	19	410	81	54		
	19		2.00	95	D	18	439	76	53		52
			Long method						47		
1– 3	13	M	1.43	62	B	107	531	124	55	c	
	13		1.38	65	B	113	536	123	57		
	14		1.33	66	B	118	541	121	55		
	18	T	2.51	58	C	—46	406	87	68	d	
	18		2.20	58	C	—46	443	81	67		
	19		2.00	56	C	—45	467	78	59		58
1– 4	18	T	2.50	79	D	17	380	92	62	c	
	18		2.20	78	D	15	422	84	58		
	19		2.00	73	D	10	453	77	59		60
1– 6	18	T	2.50	84	D	13	378	85	55	d	
	20		1.84	99	D	17	460	70	48		
	20		1.83	99	D	16	461	69	45		49
1– 7	18	T	2.50	102	D	23	363	87	57	d	
	18		2.32	107	D	24	385	83	55		
	18		2.21	104	D	23	400	81	50		54
1–11	14	M	1.39	62	B	70	549	96	53	d	
	14		1.34	61	B	69	558	92	52		
	14		1.29	62	B	71	565	90	52		
	17	T	2.50	62	C	44	395	89	50	c	
	18		2.20	58	C	46	435	81	48		
	18		2.01	61	C	50	463	75	56		51
1–12	13	M	1.52	44	A	60	541	102	35	p	
	13		1.46	43	A	59	554	98	37		
	14		1.40	44	A	62	563	96	35		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1948—Continued											
1–13	12	M	2.00	41	A	58	474	126	42	b	
	13		1.80	41	A	55	504	115	40		
	13		1.50	42	A	55	551	99	39		
	17	T	2.50	17	A	—20	458	86	52	c	
	18		2.20	14	A	—25	495	79	45		
	18		2.00	16	A	—25	522	74	49		44
1–14	12	M	2.00	69	B	100	433	154	53	c	
	13		1.80	71	B	99	467	140	60		
	13		1.50	74	B	99	512	120	54		
	17	T	2.50	8	A	—27	488	88	44	b	
	18		2.20	7	A	—28	528	81	46		
	18		2.01	6	A	—30	553	76	43		
			Long method						50		50
1–15	13	M	1.42	101	C	216	488	162	51	c	
	14		1.37	103	C	215	497	156	51		
	14		1.32	103	C	216	508	152	50		
	17	T	2.50	11	A	—24	475	88	47	b	
	18		2.20	10	A	—25	512	82	45		
	18		2.00	11	A	—26	533	76	42		48
1–16	13	M	1.48	137	C	139	463	138	40	d	
	13		1.42	135	C	142	475	134	43		
	14		1.37	136	C	141	489	130	48		48
1–17	12	M	2.00	155	C	121	366	173	42	d	
	13		1.80	154	C	136	399	166	50		
	13		1.50	151	C	135	452	140	43		
	17	T	2.50	18	A	—17	454	90	54	c	
	18		2.20	17	A	—18	491	84	50		
	18		2.02	18	A	—18	511	79	45		48
1–18	17	T	2.50	30	B	—68	425	97	50	c	
	18		2.20	31	B	—71	464	89	51		
	18		2.00	32	B	—74	486	84	48		50
1–19	14	M	1.40	91	C	107	520	112	52	d	
	14		1.35	93	C	116	529	112	59		
	14		1.30	94	C	123	535	111	57		
	17	T	2.50	5	A	—20	500	98	48	b	
	18		2.20	5	A	—23	530	90	44		
	18		2.00	5	A	—25	547	82	43		49
1–20	13	M	1.49	86	C	180	496	149	60	c	
	13		1.43	85	C	173	509	141	59		
	14		1.38	79	C	160	522	130	55		
	17	T	2.50	23	A	—13	445	91	60	c	
	18		2.20	23	A	—15	481	83	56		
	18		2.00	21	A	—17	510	78	52		
			Long method						55		57
1–21	13	M	1.58	99	C	135	479	138	58	d	
	13		1.51	92	C	126	498	128	58		
	13		1.45	89	C	107	513	115	55		
	17	T	2.50	26	B	—83	435	90	49	b	
	18		2.20	27	B	—86	470	83	49		
	18		2.00	27	B	—89	510	78	52		53
1–22	13	M	1.54	87	C	112	497	123	60	d	
	13		1.47	85	C	110	511	117	58		
	14		1.42	83	C	106	521	111	53		
	17	T	2.50	74	C	—51	390	85	61	c	
	18		2.20	71	C	—53	428	79	53		
	18		2.00	70	C	—50	455	76	53		56
1–23	13	M	1.50	42	A	59	548	101	38	c	
	13		1.44	45	A	58	561	96	42		
	14		1.39	41	A	57	571	93	40		40
1–24	13	M	1.66	59	B	63	506	109	46	c	
	13		1.58	58	B	63	518	105	46		
	13		1.51	54	B	57	535	98	47		
	17	T	2.50	16	A	—22	452	86	46	c	
	18		2.20	17	A	—23	484	79	39		
	18		2.00	18	A	—22	511	75	42		44
1–25	13	M	1.80	44	A	21	509	90	47	c	
	13		1.64	46	A	25	536	83	52		
	13		1.50	45	A	20	558	77	50		50
1–26	12	M	2.50	38	A	3	433	98	62	c	
	12		2.00	38	A	—2	502	81	64		
	13		1.50	37	A	—7	580	62	58		
			Long method						47		58
1–27	13	M	1.44	81	C	103	523	111	56	d	
	14		1.38	78	C	112	534	110	62		
	14		1.34	80	C	118	538	110	58		59
1–29	13	M	1.50	123	C	155	469	145	46	d	
	14		1.43	123	C	145	481	135	47		
	14		1.38	121	C	150	494	133	50		
1948—Continued											
1–29	17	T	2.49	36	B	—90	412	90	42	d	
	18		2.20	37	B	—90	445	84	35		
	18		2.00	38	B	—88	468	81	33		43
1–30	13	M	1.46	119	C	189	478	156	56	d	
	14		1.40	111	C	185	494	148	53		
	14		1.35	113	C	187	502	144	52		54
1–31	14	M	1.44	118	C	154	482	140	48	d	
	14		1.38	114	C	152	497	133	52		
	14		1.34	113	C	144	508	126	48		
	17	T	2.50	24	A	18	417	128	54	c	
	18		2.20	23	A	18	461	119	54		
	18		2.00	24	A	14	485	109	47		
			Long method						44		51
2– 1	13	M	1.56	94	C	125	483	131	46	d	
	13		1.48	90	C	130	497	127	50		
	13		1.43	93	C	129	507	123	43		
	18	T	2.20	29	B	—42	463	103	57	d	
	18		2.05	29	B	—48	485	94	59		
	18		1.99	29	B	—48	489	93	55		51
2– 2	14	M	1.42	83	C	164	506	136	49	d	
	14		1.37	86	C	163	513	132	44		
	14		1.32	81	C	162	524	126	42		45
2– 3	17	T	2.50	14	A	45	440	167	69	d	
	17		2.20	16	A	33	478	141	64		
	18		1.80	18	A	29	528	121	56		63
2– 8	17	T	2.49	26	B	76	414	156	68	d	
	17		2.20	26	B	90	452	149	70		
	18		2.00	27	B	84	476	140	60		66
2–11	17	T	2.50	11	A	26	442	148	49	c	
	17		2.19	10	A	10	496	120	51		
	18		2.00	10	A	7	513	111	49		50
2–12	13	M	1.57	110	C	115	477	131	56	d	
	13		1.50	108	C	124	485	129	48		
	14		1.43	107	C	123	500	125	54		
	17	T	2.51	9	A	16	458	136	45	c	
	17		2.20	7	A	7	506	119	43		
	18		2.00	6	A	3	536	110	40		
			Long method						65		48
2–13	13	M	1.56	54	B	45	530	92	45	d	
	13		1.49	54	B	41	545	85	50		
	14		1.43	53	B	36	556	80	46		47
2–14	13	M	2.00	72	B	80	442	134	60	d	
	13		1.80	69	B	75	480	121	61		
	13		1.50	67	B	73	527	103	56		
	19	T	1.57	41	B	—33	527	89	47	d	
	19		1.54	43	B	—41	531	86	50		
	19		1.52	43	B	—38	534	87	48		54
2–15	17	T	2.35	24	B	—80	466	89	61	d	
	17		2.20	26	B	—80	479	85	61		
	17		2.06	27	B	—81	494	82	57		60
2–16	13	M	2.00	104	C	180	394	194	55	d	
	13		1.80	99	C	173	430	174	55		
	13		1.50	104	C	162	485	145	54		55
2–20	14	M	1.46	111	C	91	495	113	49	d	
	14		1.40	111	C	95	506	110	50		
	14		1.35	113	C	100	513	109	48		
	17	T	2.50	24	A	6	433	114	60	c	
	17		2.20	24	A	—1	472	98	55		
	17		2.00	23	A	—4	499	91	51		53
2–23	13	M	1.58	143	C	186	437	168	45	d	
	14		1.51	141	C	179	453	159	44		
	14		1.45	141	C	175	468	152	50		46
2–25	14	M	1.47	81	C	95	513	110	53	d	
	14		1.41	76	C	90	528	103	54		
	14		1.36	78	C	92	534	101	52		53
2–26	17	T	2.50	42	B	—48	403	109	55	c	
	17		2.20	42	B	—56	445	98	56		
	17		1.83	43	B	—63	492	87	55		
			Long method						48		54
2–27	16	T	2.53	8	A	—8	472	112	52	b	
	17		2.20	10	A	—7	508	101	52		
	17		2.00	9	A	—9	535	95	49		
			Long method						45		51
3– 3	16	T	2.50	14	A	45	428	168	50	c	
	17		2.20	13	A	41	472	152	55		
	17		2.00	14	A	44	495	146	53		53
3– 4	14	M	1.40	125	C	118	493	121	51	d	
	14		1.35	125	C	120	502	118	49		
	14		1.31	125	C	114	515	113	53		
1948—Continued											
3– 4	16	T	2.49	12	A	10	451	128	50	c	
	17		2.20	11	A	6	492	115	49		
	17		2.00	11	A	2	518	105	44		50
3– 5	16	T	2.50	23	A	3	435	111	62	c	
	17		2.20	25	A	1	469	99	59		
	17		2.00	26	A	2	496	94	61		61
3– 6	16	T	2.50	21	A	31	421	145	50	c	
	17		2.20	21	A	22	463	125	53		
	17		2.00	21	A	19	494	115	55		53
3– 7	16	T	2.50	34	B	160	369	193	62	d	
	17		2.20	34	B	154	414	176	56		
	17		2.01	35	B	161	441	169	58		59
3– 9	16	T	2.51	19	A	69	398	193	46	d	
	16		2.20	15	A	56	457	167	51		
	17		2.00	15	A	52	484	153	45		47
3–10	16	T	2.50	20	A	28	422	141	55	c	
	17		2.00	19	A	23	487	121	49		
	17		1.80	20	A	25	515	115	47		50
3–13	12	M	2.51	93	C	88	345	165	53	d	
	13		2.00	93	C	84	419	138	49		
	15		1.50	76	C	60	522	97	51		51
3–14	12	M	2.49	68	B	76	370	155	49	c	
	13		1.99	66	B	70	445	128	45		
	15		1.50	60	B	61	530	98	46		
			Long method						35		47
3–15	12	M	2.50	94	C	54	351	143	47	d	
	13		2.00	91	C	51	422	120	40		
	14		1.50	94	C	49	503	95	42		
			Long method						38		43
3–20	17	T	1.54	14	A	39	560	123	34	d	
	17		1.49	13	A	37	572	120	38		
	18		1.42	15	A	39	576	118	43		38
3–21	16	T	2.50	47	C	32	367	139	41	c	
	16		2.21	46	C	36	407	131	42		
	16		2.00	45	C	39	428	126	47		43
3–22		T	Long method						71		
3–23	16	T	2.51	34	B	76	383	157	48	c	
	16		2.19	34	B	62	430	140	51		
	16		2.01	35	B	55	453	131	45		48
3–25	13	M	2.00	77	C	63	443	123	55	d	
	14		1.50	76	C	63	518	98	49		
	16	T	2.49	18	A	38	425	156	57	c	
	16		2.20	18	A	43	459	149	50		
	16		2.00	20	A	45	480	143	50		52
3–26	12	M	2.49	57	B	44	397	127	51	d	
	13		2.00	59	B	43	468	107	58		
	14		1.50	55	B	44	540	88	47		52
3–27	12	M	2.51	47	B	38	406	125	49	c	
	13		2.00	44	A	27	481	102	49		
	14		1.50	40	A	20	558	78	47		
	16	T	2.51	29	B	100	385	166	43	c	
	16		2.00	30	B	78	457	138	44		
	16		1.80	28	B	64	492	127	42		46
3–28	14	M	1.53	26	A	—7	584	67	49	d	
	14		1.48	24	A	—10	592	65	45		
	14		1.43	25	A	—9	602	63	49		48
4– 7	14	M	1.48	26	A	—9	586	64	49	d	
	14		1.43	32	A	3	591	61	53		
	14		1.39	39	A	3	588	64	58		53
4– 8	13	M	2.51	24	A	—27	468	79	66	d	
	13		2.00	23	A	—29	533	67	60		
	13		1.81	22	A	—30	557	63	57		61
4–12	14	M	1.51	70	B	34	534	75	44	d	
	14		1.45	67	B	35	546	74	48		
	14		1.41	68	B	36	551	73	48		47
4–13	13	M	2.49	80	C	26	377	119	46	d	
	13		2.00	79	C	23	441	101	39		
	14		1.60	83	C	15	507	82	49		45
4–15	13	M	2.51	72	B	16	396	88	44	d	
	13		1.99	69	B	19	470	71	42		
	14		1.50	62	B	4	551	56	48		45
4–18	15	M	1.41	57	B	21	562	66	49	d	
	15		1.38	54	B	17	571	64	50		
	15		1.35	56	B	20	575	64	50		
	15	T	2.51	7	A	109	424	262	52	d	
	16		2.00	6	A	72	514	181	49		
	16		1.80	6	A	57	552	155	49		50

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.	Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1948—Continued									
4–19 13	M	2.51	47	B 7	424	92	54	d	
13		2.00	44	A −5	493	77	60		
14		1.50	41	A −7	569	61	59		58
4–20 13	M	2.50	44	A 13	420	105	54	c	
13		2.00	39	A 7	492	88	54		
14		1.50	40	A 5	568	69	56		55
4–21 13	M	2.51	73	B 42	387	116	55	d	
13		2.01	69	B 35	457	95	50		
14		1.50	59	B 19	550	69	54		
		Long method					57		
15	T	2.50	30	B 246	372	235	78	p	
16		2.00	28	B 249	440	199	57		
16		1.80	29	B 235	478	180	60		54
4–22 13	M	2.50	98	C 62	352	148	52	d	
13		2.00	93	C 44	430	116	49		
14		1.80	98	C 25	470	97	48		50
4–23 13	M	2.52	40	A −12	433	84	57	d	
13		2.00	36	A −19	503	70	51		
14		1.50	30	A −26	585	54	48		52
4–24 13	M	2.50	49	B 17	412	101	41	d	
13		2.01	43	A 3	490	83	56		
14		1.80	42	A 0	516	77	50		
15	T	2.50	35	D 153	382	191	70	p	
16		2.00	36	D 114	459	153	64		
16		1.50	35	D 69	537	117	57		
		Long method					54		49
4–25 13	M	2.50	20	A −29	474	78	56	d	
13		2.00	20	A −31	538	67	59		
14		1.50	19	A −33	607	53	52		
15	T	2.50	18	A 53	411	174	43	d	
15		2.20	18	A 43	466	149	45		
16		2.00	19	A 38	482	136	43		50
4–26 13	M	2.00	24	A −19	525	75	55	c	
14		1.80	23	A −23	554	68	57		
14		1.50	22	A −24	601	58	55		
15	T	2.50	51	C 16	382	128	53	c	
16		2.00	53	C 13	443	112	48		
17		1.50	49	C 12	524	97	48		
		Long method					28		53
4–27 13	M	2.00	45	B 20	482	92	47	d	
14		1.81	46	B 20	510	85	48		
14		1.50	50	B 26	554	76	53		49
4–28 13	M	2.50	48	B 6	421	89	46	c	
13		1.76	45	B 1	522	69	45		
14		1.51	45	B 7	562	64	51		47
4–29 13	M	2.51	51	B 8	410	91	39	c	
13		2.01	49	B 4	480	76	44		
14		1.50	46	B 3	560	61	43		
		Long method					42		42
4–30 13	M	2.50	40	A −4	428	91	53	c	
13		2.00	41	A −5	495	78	54		
14		1.50	40	A −8	569	61	55		
15	T	2.50	25	A 68	393	189	39	d	
16		2.00	26	A 62	464	156	43		
16		1.80	25	A 59	492	145	41		54
5– 1 15	T	2.51	25	A 43	411	157	62	c	
16		2.00	24	A 32	484	127	59		
16		1.80	26	A 28	509	114	58		60
5– 2 13	M	2.50	87	C −17	383	93	43	c	
13		2.01	90	C −16	441	82	38		
14		1.50	84	C −17	528	64	42		41
5– 3 13	M	2.51	23	A −29	463	76	55	b	
13		2.00	21	A −32	531	65	54		
14		1.80	24	A −33	554	61	55		55
5–10 13	M	2.00	16	A 8	531	98	53	b	
14		1.80	16	A 4	560	88	55		
15		1.50	16	A −2	604	72	50		53
5–11 14	M	2.01	22	A 26	512	110	54	c	
14		1.80	20	A 15	548	95	55		
15		1.50	18	A −4	598	70	51		53
5–12 14	M	1.99	39	A 83	469	146	36	d	
14		1.81	40	A 83	499	135	42		
15		1.50	40	A 82	548	114	43		40
5–13 13	M	2.49	39	A 16	421	110	50	c	
14		2.00	38	A 7	492	88	55		
14		1.80	37	A 6	523	82	56		54
1948—Continued									
5–14 13	M	2.49	22	A −22	465	84	52	b	
14		2.00	21	A −23	533	72	58		
14		1.80	22	A −25	556	67	55		
15	T	2.50	43	B −38	404	114	63	c	
15		2.00	43	B −52	470	95	59		
16		1.50	46	B −77	540	76	52		55
		Long method					46		
5–15 13	M	2.49	22	A −16	464	89	52	c	
14		2.00	21	A −18	531	76	52		
15		1.50	19	A −23	602	59	51		
		Long method					36		
16	T	1.80	34	B −19	508	99	62	d	
16		1.63	38	B −18	523	96	52		
16		1.50	41	B −11	538	95	53		54
5–18 14	M	1.71	52	B 27	521	85	54	d	
14		1.65	48	B 23	535	81	56		
15		1.60	46	B 20	545	77	56		55
5–21 16	T	1.62	26	B 281	509	179	56	d	
16		1.50	27	B 272	531	167	58		
16		1.42	27	B 272	542	161	49		54
5–24 15	T	2.20	41	B 205	389	199	47	d	
15		2.00	44	B 201	416	186	45		
16		1.80	44	B 192	453	171	48		47
5–25 13	M	2.51	78	C 11	387	110	59	d	
14		2.01	71	B 34	460	93	58		
14		1.80	72	B 36	490	88	58		58
5–26 13	M	2.51	49	B 14	423	98	62	c	
14		2.01	45	B 11	491	84	60		
15		1.50	45	B 10	565	66	56		59
		Long method					47		
5–27 13	M	2.50	50	B 26	411	110	54	c	
14		2.01	46	B 14	487	86	56		
15		1.50	49	B 13	562	67	58		
		Long method					43		55
5–28 13	M	2.51	22	A −20	462	86	55	c	
14		2.00	21	A −21	528	74	50		
15		1.45	20	A −20	606	59	47		
		Long method					37		50
5–29 13	M	2.51	18	A −20	472	87	53	b	
14		2.00	18	A −21	546	75	54		
15		1.50	20	A −19	598	61	47		
		Long method					37		51
5–30 13	M	2.50	19	A −30	473	79	55	b	
14		2.00	18	A −29	539	69	56		
14		1.80	17	A −31	566	64	53		55
5–31 13	M	2.50	51	B −5	425	79	49	b	
14		2.01	54	B 0	482	70	49		
14		1.80	55	B 2	510	68	48		49
6– 1 13	M	2.50	45	A −2	428	91	65	d	
15		1.52	44	A −1	561	65	59		
15		1.50	42	A −9	570	60	62		62
6– 2 13	M	2.51	36	A −8	436	90	59	d	
14		2.00	33	A −16	515	73	65		
14		1.80	30	A −19	540	68	60		61
6– 3 13	M	2.51	19	A −17	468	92	58	c	
14		2.00	18	A −20	538	76	60		
14		1.80	16	A −23	569	70	60		59
6– 4 13	M	2.50	18	A −28	477	80	60	b	
14		2.00	17	A −31	543	68	58		
14		1.80	16	A −32	571	63	55		58
6– 5 13	M	2.50	19	A −25	474	83	56	b	
14		2.00	18	A −26	540	71	57		
15		1.50	16	A −27	610	57	52		
		Long method					42		55
6– 6 13	M	2.51	24	A −5	453	99	55	b	
14		2.00	23	A −10	523	82	54		
15		1.50	20	A −15	600	63	54		
		Long method					50		54
6– 7 13	M	2.51	15	A −28	482	81	56	b	
14		2.00	16	A −27	544	71	58		
14		1.80	18	A −26	568	67	59		58
6– 8 13	M	2.50	11	A −36	505	75	60	b	
14		2.21	11	A −36	540	68	60		
14		2.00	11	A −38	567	64	62		61
6–11 15	M	1.63	70	B 25	522	73	56	b	
15		1.59	67	B 27	528	75	56		
15		1.55	68	B 30	530	74	54		
1948—Continued									
6–11 15	T	2.50	37	B 44	400	146	74	d	
15		2.20	35	B 32	443	129	68		
15		2.00	37	B 33	466	124	62		58
6–12 13	M	2.50	68	B 33	398	108	57	d	
14		2.00	68	B 30	464	90	49		
14		1.80	64	B 21	500	80	47		51
6–14 15	T	2.20	24	A 45	455	148	68	d	
15		2.00	24	A 42	481	138	64		
16		1.80	24	A 39	510	128	62		65
6–17 15	T	2.20	14	A 54	463	165	49	d	
15		2.00	12	A 51	494	155	48		
16		1.50	13	A 33	568	117	39		45
6–22 15	T	2.52	61	C 103	344	195	69	d	
15		2.20	58	C 88	392	167	67		
15		2.00	52	C 75	431	150	60		65
6–24 13	M	2.51	33	A −10	440	89	56	c	
14		2.00	30	A −17	511	74	55		
14		1.80	31	A −17	538	69	58		56
6–25 13	M	2.50	12	A −39	498	73	55	b	
14		2.00	12	A −40	565	63	60		
14		1.80	10	A −43	590	58	56		57
6–26 13	M	2.50	10	A −37	504	75	54	a	
14		2.00	9	A −40	569	64	54		
15		1.50	7	A −40	638	52	54		
		Long method					42		54
6–27 13	M	2.50	38	A 2	426	97	49	b	
14		2.00	39	A −1	492	82	52		
14		1.80	37	A −3	525	76	55		52
6–28 13	M	2.48	64	B 12	411	88	49	b	
14		2.21	60	B 8	450	80	50		
14		2.00	61	B 7	477	73	50		50
6–29 13	M	2.50	50	B 22	415	106	56	b	
14		2.20	48	B 22	457	94	57		
14		2.00	46	B 16	483	85	51		55
6–30 13	M	2.51	35	A 4	429	102	52	c	
14		2.20	35	A −5	477	86	54		
14		2.00	33	A −13	504	76	54		53
7– 1 13	M	2.50	20	A −28	470	79	53	b	
14		2.00	20	A −31	533	67	50		
15		1.50	15	A −37	614	51	51		
		Long method					37		51
7– 2 13	M	2.50	9	A −42	511	72	54	c	
14		2.21	8	A −41	549	66	58		
15	T	2.19	33	B −80	463	86	54	d	
15		2.00	37	B −90	487	80	57		
16		1.80	35	B −94	517	74	59		56
7– 3 13	M	2.50	14	A −39	493	72	58	a	
14		2.01	13	A −39	553	63	55		
14		1.80	13	A −39	580	60	55		
15	T	2.51	38	B −24	407	118	60	c	
15		1.99	38	B −43	477	97	53		
16		1.50	41	B −58	552	80	57		
		Long method					45		56
7– 4 15	T	2.50	54	C −40	404	90	65	c	
15		2.20	49	C −41	444	83	60		
15		2.00	45	C −43	477	77	59		61
7– 5 15	T	2.50	28	A −64	429	100	59	b	
15		2.19	28	A −64	471	92	63		
15		2.00	28	A −67	497	86	60		61
7– 6 13	M	2.51	34	A −18	450	81	69	b	
14		2.21	33	A −22	486	73	64		
14		2.00	32	A −25	523	67	70		68
7– 7 13	M	2.51	24	A −22	463	84	59	b	
14		2.21	24	A −22	504	77	60		
14		2.00	25	A −23	530	71	63		
15	T	2.50	16	A −17	459	92	59	c	
15		2.19	18	A −17	498	84	62		
16		1.80	16	A −25	553	71	58		60
7– 8 13	M	2.51	27	A −7	452	95	60	c	
14		2.20	27	A −8	489	87	59		
14		2.00	29	A −7	524	82	70		
15	T	2.51	16	A −17	457	93	57	b	
15		2.20	16	A −18	499	85	63		
15		2.00	17	A −19	512	79	56		59
7– 9 15	T	2.50	18	A −14	453	94	61	b	
15		2.20	18	A −16	490	85	59		
15		2.00	18	A −16	514	81	54		58

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1948—Continued											
7–10	15	T	2.50	10	A	—23	480	90	57	a	
	15		2.20	9	A	—25	522	83	56		
	15		2.00	9	A	—24	545	80	57		56
7–11	13	M	2.50	18	A	—28	476	80	57	a	
	14		2.00	16	A	—31	545	68	57		
	14		1.80	15	A	—34	576	62	56		
	15	T	2.50	17	A	—15	452	94	52	c	
	15		2.20	14	A	—20	504	84	65		
	15		2.00	13	A	—25	532	76	56		57
7–12	15	T	2.50	13	A	—23	468	88	61	b	
	15		2.20	13	A	—24	505	81	57		
	15		2.00	13	A	—27	530	74	54		57
7–13	14	M	2.20	33	A	—13	482	81	57	b	
	14		2.00	34	A	—12	509	76	59		
	14		1.80	36	A	—15	536	69	64		
	15	T	2.50	12	A	—22	473	90	59	b	
	15		2.20	12	A	—22	505	84	53		
	15		2.00	13	A	—22	529	79	53		57
7–14	13	M	2.50	31	A	—26	455	75	60	b	
	14		2.21	32	A	—28	489	69	59		
	14		2.00	32	A	—29	520	64	65		
	15	T	2.49	16	A	—18	457	91	60	c	
	15		2.19	16	A	—19	494	84	53		
	15		2.00	16	A	—19	519	80	51		58
7–15	15	T	2.50	65	C	69	343	170	57	c	
	15		2.20	63	C	66	387	154	50		
	15		2.00	64	C	59	419	142	60		56
7–16	13	M	2.50	19	A	—32	477	77	60	b	
	14		2.20	17	A	—34	520	70	57		
	14		2.00	18	A	—33	545	66	62		
	15	T	2.50	50	C	24	373	133	47	c	
	15		2.20	46	C	18	418	120	47		
	15		2.00	41	C	7	458	107	49		54
7–17	13	M	2.50	25	A	—17	459	87	58	b	
	14		2.21	26	A	—17	499	80	60		
	14		2.00	23	A	—17	525	76	58		59
7–18	13	M	2.50	21	A	—25	471	81	56	b	
	14		2.20	20	A	—29	509	72	56		
	14		2.00	19	A	—32	542	67	61		58
7–19	13	M	2.50	8	A	—44	514	69	53	a	
	14		2.00	8	A	—45	576	60	58		
	15		1.50	7	A	—45	641	49	55		
			Long method						47		
	15	T	2.50	37	B	—85	420	93	58	d	
	15		2.20	40	B	—61	451	96	60		
	15		2.00	40	B	—41	468	98	51		55
7–20	13	M	2.50	5	A	—44	529	70	61	a	
	14		2.00	5	A	—47	594	60	65		
	15		1.50	4	A	—47	657	49	59		
			Long method						53		
	15	T	2.50	29	B	—48	429	106	62	d	
	15		2.20	38	B	—36	453	103	54		
	15		2.00	33	B	—39	477	97	54		60
7–21	13	M	2.50	7	A	—41	521	73	62	b	
	14		2.19	7	A	—42	557	66	58		
	14		2.00	7	A	—44	585	62	64		
	15	T	2.49	35	B	46	397	145	66	d	
	15		2.20	36	B	30	434	129	53		
	15		2.00	37	B	24	459	121	50		60
7–22	13	M	2.50	6	A	—40	522	74	57	b	
	14		2.19	6	A	—40	556	68	54		
	14		1.99	5	A	—43	588	63	63		58
7–23	14	M	1.82	17	A	—35	567	62	54	c	
	14		1.75	16	A	—31	575	62	53		
	14		1.69	14	A	—34	591	59	54		54
7–24	15	T	2.51	15	A	—20	464	89	59	d	
	15		2.19	13	A	—23	510	82	66		
	15		2.00	13	A	—26	533	75	56		60
7–25	15	T	2.50	7	A	—29	498	85	62	b	
	15		2.20	8	A	—30	528	78	56		
	15		2.00	7	A	—32	556	73	55		58
7–26	13	M	2.49	21	A	—34	474	73	55	c	
	13		2.19	19	A	—33	513	70	54		
	14		2.00	20	A	—32	538	66	61		57
7–27	13	M	2.50	18	A	—31	477	76	55	b	
	14		2.00	18	A	—34	545	65	58		
	15		1.50	17	A	—35	615	52	55		
			Long method						45		56
1948—Continued											
7–28	15	T	2.50	85	D	48	353	118	57	c	
	15		2.20	86	D	37	397	108	53		
	16		2.00	90	D	37	422	101	53		54
7–29	13	M	2.20	33	A	—14	480	79	55	b	
	13		2.00	31	A	—13	509	76	54		
	14		1.80	32	A	—10	546	74	57		
	15	T	2.50	55	C	—31	399	97	59	d	
	16		2.00	54	C	—35	460	83	49		
	17		1.50	69	C	—46	526	69	50		
			Long method						46		54
7–30	15	T	2.49	78	D	18	377	94	58	c	
	15		2.20	81	D	18	413	87	54		
	16		1.99	83	D	18	440	82	54		55
7–31	14	M	1.61	56	B	16	528	71	45	d	
	14		1.56	59	B	16	537	69	50		
	15		1.52	58	B	20	543	70	49		
	15	T	2.50	79	D	48	348	134	47	c	
	15		2.20	80	D	41	394	117	49		
	16		2.00	80	D	40	425	109	53		49
8– 1	13	M	2.49	27	A	—26	459	79	55	c	
	13		2.20	27	A	—25	496	73	58		
	14		2.00	25	A	—27	525	68	56		
	15	T	2.50	102	D	36	349	107	54	c	
	15		2.20	105	D	37	389	98	54		
	16		1.99	108	D	36	419	91	58		55
8– 4	14	M	1.76	42	A	—13	530	66	56	c	
	14		1.69	41	A	—12	541	64	62		
	14		1.63	42	A	—10	550	63	57		58
8– 5	15	T	2.50	19	A	—14	451	92	60	d	
	15		2.20	22	A	—16	484	83	59		
	16		2.00	21	A	—16	508	79	56		58
8– 8	13	M	2.50	8	A	—36	512	76	60	c	
	13		2.20	8	A	—38	546	70	53		
	14		2.01	9	A	—38	571	66	57		
	15	T	2.49	16	A	4	443	118	52	c	
	15		2.21	16	A	4	479	109	47		
	16		2.00	16	A	2	508	102	48		55
8– 9	16	T	2.00	42	B	—78	478	85	62	c	
	16		1.79	41	B	—86	509	78	60		
	17		1.50	38	B	—85	555	72	54		59
8–10	14	M	2.01	17	A	—30	539	69	56	b	
	14		1.80	16	A	—32	571	63	58		
	14		1.70	16	A	—30	588	61	56		
	15	T	2.50	30	B	—79	429	92	58	b	
	15		2.20	29	B	—84	469	84	58		
	16		2.00	28	B	—90	499	78	61		58
8–11	13	M	2.50	15	A	—37	494	73	61	c	
	13		2.21	14	A	—38	527	67	53		
	13		2.00	14	A	—39	555	63	57		
	15	T	2.51	17	A	—17	462	91	63	c	
	16		2.00	18	A	—20	527	77	62		
	17		1.50	20	A	—26	593	62	60		
			Long method						58		59
8–12	13	M	2.49	14	A	—41	491	70	52	b	
	13		2.00	13	A	—40	556	62	55		
	15		1.50	13	A	—42	626	49	55		
			Long method						45		
	15	T	2.50	15	A	—9	459	103	60	c	
	15		2.20	15	A	—12	493	93	52		
	16		2.02	16	A	—12	517	87	50		54
8–13	13	M	2.51	9	A	—42	511	72	55	b	
	13		2.00	8	A	—41	576	63	60		
	15		1.50	7	A	—40	643	52	55		
			Long method						49		
	15	T	2.49	21	A	—11	447	96	63	b	
	15		2.20	20	A	—12	487	87	64		
	16		2.00	20	A	—15	513	81	59		59
8–14	13	M	2.50	12	A	—1	474	108	42	d	
	13		2.00	12	A	—10	548	86	46		
	15		1.50	9	A	—25	630	61	51		
			Long method						41		
	15	T	2.50	18	A	—19	458	88	61	c	
	15		2.20	18	A	—21	494	80	56		
	16		2.01	17	A	—23	522	75	56		52
8–15	15	T	2.49	18	A	—10	448	98	57	b	
	15		2.19	19	A	—12	487	90	57		
	16		2.00	18	A	—13	514	84	54		56
1948—Continued											
8–16	15	T	2.51	35	B	—63	415	101	55	b	
	15		2.21	39	B	—74	450	91	52		
	16		2.00	41	B	—78	474	85	52		53
8–18	15	T	2.51	44	B	—62	393	105	45	c	
	15		2.19	37	B	—62	457	95	49		
	16		2.00	32	B	—63	485	88	51		48
8–19	15	T	2.50	22	A	—7	438	100	55	b	
	15		2.20	22	A	—9	476	91	52		
	16		2.00	20	A	—11	508	85	55		54
8–23	15	T	2.50	28	B	—70	428	96	52	b	
	16		2.20	28	B	—73	467	88	50		
	16		2.00	28	B	—78	497	82	53		52
8–24	15	T	2.49	28	B	—81	433	91	57	d	
	16		2.21	28	B	—87	464	83	44		
	16		2.00	26	B	—92	501	77	54		52
8–28	15	M	1.36	30	A	—2	596	63	41	d	
	15		1.34	25	A	—11	612	59	44		
	15		1.31	25	A	—11	616	58	43		43
8–30	14	M	1.55	61	B	15	535	66	44	d	
	14		1.50	59	B	12	548	63	47		
	14		1.45	57	B	12	555	62	44		45
8–31	14	M	1.57	118	C	96	466	124	44	d	
	14		1.45	113	C	106	489	118	46		
	14		1.40	112	C	108	501	115	49		46
9– 1	14	M	1.58	101	C	155	457	148	36	d	
	14		1.52	99	C	144	473	138	40		
	14		1.47	98	C	139	483	132	38		38
9– 2	13	M	2.20	39	A	20	458	105	48	b	
	13		2.00	34	A	12	494	94	51		
	13		1.80	32	A	14	527	90	51		50
9– 3	13	M	2.00	9	A	—31	561	71	50	b	
	13		1.80	9	A	—33	587	66	51		
	14		1.50	7	A	—35	635	55	51		
	15	T	2.51	125	D	124	264	220	48	d	
	16		2.00	123	D	116	353	177	49		
	17		1.50	125	D	99	446	133	43		50
9– 4	13	M	2.52	17	A	—25	476	83	60	b	
	13		2.20	17	A	—26	516	76	55		
	13		2.00	17	A	—27	543	71	57		57
9– 5	13	M	2.20	25	A	—5	495	90	60	c	
	13		2.01	24	A	—8	524	83	63		
	13		1.80	22	A	—13	551	75	56		60
9– 6	12	M	2.51	17	A	—26	479	83	54	b	
	13		2.01	17	A	—27	546	71	57		
	14		1.50	16	A	—27	614	57	52		
			Long method						42		
	15	T	2.51	37	B	—27	404	116	50	c	
	16		2.20	38	B	—18	442	112	48		
	16		2.01	38	B	—12	465	108	42		54
9– 7	12	M	2.50	12	A	—34	502	77	61	b	
	13		2.00	12	A	—36	563	66	58		
	14		1.50	11	A	—37	635	52	58		
	15	T	2.52	38	B	35	387	143	48	b	
	16		2.22	40	B	34	427	133	42		
	16		2.00	41	B	38	449	127	45		52
9–10	15	M	1.31	68	B	20	573	59	47	d	
	15		1.24	68	B	20	583	57	45		46
9–11	12	M	2.50	25	A	—23	459	81	56	b	
	13		2.01	23	A	—26	529	69	57		
	13		1.80	22	A	—29	562	64	63		59
9–12	12	M	2.51	31	A	—11	448	90	59	b	
	13		2.00	31	A	—11	516	78	65		
	13		1.80	30	A	—12	543	73	61		62
9–13	12	M	2.50	30	A	5	443	105	60	c	
	13		2.00	28	A	—1	516	87	61		
	14		1.50	25	A	—9	590	66	52		
			Long method						51		58
9–14	12	M	2.50	24	A	—5	452	99	52	c	
	13		2.01	22	A	—9	523	83	58		
	13		1.80	22	A	—12	558	76	61		57
9–15	12	M	2.50	16	A	—22	482	86	59	b	
	13		2.00	16	A	—22	541	75	54		
	13		1.79	16	A	—23	572	69	61		58
9–16	12	M	2.50	25	A	8	446	110	55	c	
	13		2.00	23	A	0	520	89	59		
	13		1.80	23	A	—2	551	82	60		58
9–17	12	M	2.50	24	A	—11	457	93	59	b	
	13		2.20	25	A	—13	494	84	55		
	13		2.00	23	A	—13	521	79	57		57

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1948—Continued											
9–19	12	M	2.51	10	A	−34	499	78	56	b	
	13		1.99	10	A	−37	564	66	54		
	13		1.80	9	A	−40	594	61	56		
	16	T	2.49	24	B	−68	448	97	69	d	
	16		2.00	27	B	−93	506	83	59		
	17		1.80	29	B	−80	533	78	64		57
9–20	12	M	2.51	11	A	−37	500	74	57	b	
	13		2.00	11	A	−38	566	64	56		
	14		1.50	9	A	−43	630	62	49		
			Long method						36		
	16	T	2.50	18	A	−14	458	94	61	c	
	16		2.21	18	A	−15	494	86	59		
	16		2.00	20	A	−9	513	87	57		56
9–22	16	T	2.50	15	A	−1	465	114	70	d	
	16		2.20	16	A	−2	501	102	63		
	16		2.00	15	A	−2	527	97	67		67
9–23	12	M	2.51	18	A	−18	471	89	57	b	
	13		2.00	17	A	−23	539	74	58		
	13		1.80	15	A	−28	567	67	52		
	16	T	2.51	65	C	−32	387	99	57	c	
	16		2.00	61	C	−38	468	83	64		
	17		1.49	57	C	−45	540	68	56		
			Long method						37		56
9–24	12	M	2.50	20	A	−5	462	100	55	b	
	12		2.21	19	A	−8	500	91	55		
	13		2.00	20	A	−11	530	82	55		55
9–25	13	M	1.53	26	A	−1	577	71	46	d	
	14		1.47	27	A	2	588	71	50		
	14		1.41	28	A	9	594	71	50		49
9–26	12	M	2.49	28	A	−20	455	82	60	c	
	13		1.99	28	A	−25	524	68	64		
	13		1.80	28	A	−27	551	63	61		
	16	T	2.48	37	B	−53	423	106	57	c	
	16		2.20	37	B	−53	458	98	49		
	16		2.00	39	B	−65	486	89	55		57
9–27	12	M	2.49	25	A	−27	466	78	61	b	
	13		1.99	24	A	−29	532	67	59		
	13		1.50	24	A	−29	599	54	55		
			Long method						42		
	16	T	2.51	37	B	−44	417	109	63	c	
	16		2.21	37	B	−58	457	96	55		
	16		2.00	36	B	−70	487	87	58		58
9–28	12	M	2.51	21	A	−26	468	80	63	b	
	13		2.00	20	A	−28	535	69	62		
	13		1.50	18	A	−29	611	55	59		61
9–29	12	M	2.51	20	A	−14	465	92	59	c	
	12		2.00	21	A	−15	534	78	62		
	13		1.50	19	A	−17	601	62	53		58
9–30	12	M	2.50	25	A	4	449	107	57	b	
	12		1.99	25	A	3	517	91	57		
	13		1.50	22	A	−5	595	69	57		57
10– 1	14	M	1.42	27	A	20	590	79	48	b	
	14		1.37	27	A	19	600	76	50		
	14		1.32	27	A	15	608	72	50		
	16	T	2.52	79	D	60	339	152	45	c	
	16		2.21	88	D	66	375	144	47		
	16		2.01	88	D	66	401	137	43		48
10– 5	12	M	2.00	40	A	23	482	100	48	b	
	13		1.79	42	A	22	513	92	53		
	13		1.50	39	A	22	560	80	50		50
10– 6	12	M	2.00	76	C	29	450	104	54	c	
	13		1.80	72	B	44	481	95	54		
	13		1.50	73	B	43	535	81	58		
	16	T	2.51	73	C	−14	376	112	64	c	
	16		2.21	74	C	−13	417	104	65		
	17		2.00	73	C	−18	445	96	61		59
10– 7	18	T	1.56	48	C	−54	539	64	52	b	
	18		1.50	50	C	−56	547	62	52		
	18		1.45	50	C	−56	554	61	52		52
10–10	17	T	1.81	30	B	−85	523	76	51	c	
	17		1.69	30	B	−96	543	71	52		
	17		1.60	33	B	−99	554	69	56		53
10–11	13	M	1.58	37	A	2	558	71	51	c	
	13		1.49	34	A	−5	577	66	50		
	13		1.40	30	A	−9	594	61	51		
	17	T	1.97	31	B	−87	504	78	44	c	
	17		1.80	30	B	−90	527	72	45		
	17		1.70	31	B	−98	540	68	44		48
1948—Continued											
10–13	12	M	1.99	22	A	−5	524	86	58	c	
	13		1.80	20	A	−7	551	80	57		
	13		1.50	16	A	−7	602	69	53		56
10–14	12	M	2.51	20	A	−12	469	93	63	c	
	12		1.99	18	A	−18	538	77	63		
	13		1.50	17	A	−22	613	60	58		
	16	T	2.51	23	A	−8	440	97	56	b	
	16		2.21	24	A	−10	447	88	53		
	17		2.00	26	A	−7	499	85	55		57
10–16	16	T	2.51	66	C	−3	376	118	54	d	
	17		2.00	72	C	−12	437	110	48		
	18		1.50	59	C	−28	521	76	42		
			Long method						26		48
10–18	12	M	2.49	17	A	3	456	109	40	d	
	12		2.00	17	A	−3	528	90	49		
	13		1.50	16	A	−7	600	69	47		45
10–19	12	M	2.47	28	A	−12	451	89	55	c	
	12		2.00	26	A	−17	514	75	49		
	13		1.50	24	A	−18	592	61	55		53
10–20	12	M	2.50	29	A	39	428	137	50	b	
	12		2.00	28	A	33	500	113	52		
	12		1.79	29	A	29	532	102	53		
	16	T	2.51	92	D	37	356	114	49	d	
	17		2.00	86	D	28	437	92	58		
	18		1.50	74	D	14	514	71	45		
			Long method						72		52
10–21	12	M	2.00	30	A	91	480	157	41	p	
	12		1.80	31	A	92	508	144	38		
	13		1.50	29	A	89	554	123	34		
10–22	13	M	1.44	33	A	45	574	92	45	d	
	13		1.38	34	A	44	584	88	43		
	14		1.34	31	A	41	595	85	50		46
10–23	13	M	1.37	42	A	156	550	148	25	p	
	14		1.32	43	A	154	561	141	29		
	14		1.28	43	A	155	568	138	27		
10–24	13	M	1.42	62	B	147	525	151	62	d	
	13		1.37	60	B	140	535	143	56		
	14		1.32	60	B	140	543	138	55		58
10–27	13	M	1.43	36	A	7	585	69	54	d	
	13		1.37	36	A	7	593	67	54		
	14		1.33	35	A	8	605	66	61		
	16	T	2.51	38	B	16	402	133	63	d	
	17		2.00	37	B	34	463	124	51		
	19		1.50	42	B	64	528	117	54		
			Long method						18		56
10–28	13	M	1.41	27	A	52	586	96	46	p	
	13		1.36	26	A	51	596	92	44		
	14		1.31	23	A	29	612	80	48		
10–29	13	M	1.40	14	A	−13	626	63	50	c	
	13		1.35	15	A	−15	636	60	50		
	14		1.30	14	A	−20	640	57	45		48
10–30	12	M	2.50	9	A	−1	487	109	48	c	
	12		1.99	7	A	−12	564	86	50		
	13		1.50	4	A	−21	641	65	52		
			Long method						50		
	19	T	1.50	46	C	20	521	100	43	d	
	20		1.50	52	C	19	516	101	42		
	20		1.50	58	C	10	517	97	47		48
10–31	12	M	2.49	12	A	44	461	149	46	c	
	12		2.00	13	A	44	527	127	44		
	13		1.50	12	A	38	606	98	53		
			Long method						48		
	16	T	2.50	62	C	−33	397	96	59	c	
	17		2.21	61	C	−38	437	87	57		
	17		2.00	59	C	−42	463	80	55		52
11– 1	16	T	2.51	87	D	16	380	88	58	d	
	17		2.01	90	D	16	440	76	50		
	19		1.52	84	D	28	501	81	47		52
11– 2	12	M	1.99	18	A	21	523	107	52	c	
	12		1.80	16	A	16	554	97	52		
	13		1.50	14	A	9	606	80	54		
	16	T	2.51	83	D	15	378	87	58	c	
	17		2.21	84	D	13	417	80	55		
	17		2.00	87	D	14	443	75	55		54
11– 3	12	M	2.00	13	A	−3	539	91	53	b	
	12		1.80	13	A	−3	568	85	56		
	13		1.50	13	A	−4	612	72	54		54
1948—Continued											
11– 4	12	M	2.00	42	A	−5	499	78	66	c	
	12		1.80	42	A	−6	525	72	62		
	13		1.50	42	A	−6	566	61	57		62
11– 5	12	M	2.50	30	A	−22	454	80	60	c	
	12		1.99	31	A	−24	521	68	62		
	13		1.50	29	A	−24	588	55	56		
	17	T	2.48	39	B	−28	420	115	73	p	
	17		2.21	39	B	−37	456	104	65		
	17		2.00	39	B	−34	480	100	60		59
11– 6	12	M	2.51	32	A	15	435	114	61	c	
	12		2.00	30	A	8	508	93	61		
	13		1.50	28	A	5	583	73	58		60
11– 7	12	M	2.51	31	A	39	431	135	57	c	
	12		2.00	30	A	30	504	110	58		
	13		1.50	26	A	17	582	81	53		
			Long method						53		56
11– 8	12	M	2.50	17	A	−4	470	103	57	b	
	12		1.99	17	A	−6	535	87	53		
	13		1.50	16	A	−7	609	69	53		
			Long method						42		
	18	T	1.72	12	A	−22	575	74	58	c	
	18		1.68	12	A	−23	580	73	57		
	19		1.65	12	A	−25	583	70	53		55
11– 9	12	M	2.51	20	A	13	457	117	61	c	
	12		2.00	19	A	9	525	98	55		
	13		1.50	20	A	7	596	77	56		
			Long method						40		
	16	T	2.81	23	A	−10	412	101	63	c	
	17		2.30	24	A	−10	467	91	58		
	18		1.80	24	A	−15	536	75	54		
			Long method						46		58
11–10	12	M	1.81	26	A	55	530	120	52	c	
	12		1.71	24	A	54	545	116	48		
	13		1.62	24	A	53	559	110	51		50
11–13	12	M	2.00	22	A	−5	529	86	56	c	
	12		1.80	21	A	−10	555	77	64		
	13		1.50	21	A	−10	601	66	61		
	17	T	2.50	36	B	−110	431	82	60	c	
	17		2.20	38	B	−113	468	75	54		
	18		2.00	38	B	−119	492	70	53		57
11–14	12	M	2.00	48	B	14	486	85	57	c	
	12		1.80	48	B	10	519	76	63		
	13		1.50	48	B	15	561	69	57		
	16	T	2.78	19	A	−17	430	96	59	d	
	17		2.28	19	A	−19	486	83	56		
	18		1.68	27	A	8	528	91	43		56
11–15	12	M	1.99	65	B	19	471	82	55	b	
	12		1.80	62	B	16	501	76	54		
	13		1.50	59	B	19	548	69	55		55
11–16	12	M	2.00	67	B	30	462	91	53	b	
	12		1.80	66	B	26	494	82	50		
	13		1.50	63	B	27	541	72	50		51
11–19	13	M	1.46	36	A	7	580	70	57	c	
	13		1.40	35	A	6	593	68	57		
	13		1.35	34	A	3	600	64	56		57
11–21	19	T	1.76	26	A	−19	542	69	60	d	
	19		1.73	25	A	−23	549	67	63		
	19		1.72	23	A	−24	552	66	61		61
11–22	19	T	1.75	50	C	−57	512	65	56	c	
	19		1.73	49	C	−60	513	64	54		
	19		1.72	51	C	−61	516	63	54		55
11–23	17	T	2.51	80	D	14	384	87	60	c	
	18		2.00	79	D	10	449	74	53		
	19		1.80	78	D	8	479	69	56		
			Long method						38		56
11–25	12	M	2.00	26	A	42	502	120	55	d	
	12		1.80	22	A	30	536	105	55		
	13		1.50	23	A	10	587	86	52		
	17	T	2.50	15	A	−12	467	99	58	b	
	18		2.21	14	A	−12	504	93	56		
	18		2.00	14	A	−15	526	85	51		54
11–26	13	M	1.63	13	A	−5	594	76	51	c	
	13		1.55	13	A	−7	609	72	53		
	13		1.48	12	A	−8	618	69	49		51
11–27	12	M	2.51	16	A	−1	470	105	55	b	
	12		1.99	14	A	−4	539	90	55		
	13		1.50	13	A	−5	613	71	58		56

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1948—Continued											
11–29	12	M	2.50	16	A	15	466	120	60	c	
	12		2.00	16	A	11	532	100	59		
	13		1.50	14	A	—3	611	73	57		
	17	T	2.27	22	A	—14	482	86	61	c	
	18		2.18	21	A	—15	492	84	57		
	18		2.08	20	A	—17	507	81	55		58
11–30	17	T	2.51	12	A	—23	479	89	56	c	
	18		2.20	10	A	—25	517	82	54		
	18		2.00	12	A	—25	542	77	58		56
12– 2	17	T	2.50	39	B	—109	423	82	53	b	
	18		2.19	41	8	—116	461	75	51		
	18		2.00	40	B	—117	483	71	49		
			Long method						36		51
12– 4	12	M	2.21	19	A	14	494	109	57	c	
	12		2.00	18	A	13	522	101	54		
	12		1.80	18	A	6	554	89	54		55
12– 5	12	M	2.20	27	A	72	456	155	37	p	
	12		2.01	28	A	72	484	143	44		
	12		1.80	26	A	66	519	128	40		
12– 9	19	T	1.91	50	C	—59	487	66	55	d	
	19		1.88	50	C	—59	496	66	62		
	20		1.85	49	C	—57	498	66	61		59
12–10	17	T	2.50	18	A	—20	459	86	55	b	
	18		2.18	17	A	—23	498	79	55		
	19		2.00	18	A	—22	522	75	51		54
12–15	17	T	2.62	17	A	—22	451	87	61	d	
	17		2.50	19	A	—22	463	84	60		
	18		2.31	18	A	—22	485	80	58		59
12–19	19	T	1.90	9	A	—31	564	71	55	b	
	19		1.89	7	A	—34	571	69	52		
	20		1.88	7	A	—34	568	69	49		52
12–24	17	T	2.50	8	A	—27	494	88	51	b	
	18		2.20	9	A	—27	524	81	49		
	19		2.00	9	A	—28	552	76	56		
			Long method						39		52
12–25	18	T	2.07	9	A	—27	543	78	54	c	
	19		2.00	8	A	—27	553	78	54		
	19		1.97	9	A	—26	557	77	54		54
12–28	18	T	2.50	13	A	14	458	131	60	c	
	18		2.20	14	A	4	493	111	53		
	19		2.00	14	A	0	522	101	52		55
1949											
1– 1	18	T	2.49	41	B	—85	416	94	59	c	
	18		2.35	45	B	—87	431	90	61		
	18		2.23	47	B	—87	445	89	58		59
1– 5	20	T	1.85	12	A	—21	551	78	51	d	
	21		1.87	13	A	—19	545	79	50		
	21		2.00	14	A	—20	521	80	41		47
1– 7	18	T	2.51	15	A	—9	459	103	54	c	
	18		2.17	13	A	—11	502	94	54		
	19		2.00	16	A	—9	522	90	57		55
1–12	12	M	2.19	141	C	222	320	241	48	d	
	12		1.94	143	C	204	362	210	45		
	13		1.79	144	C	196	389	192	50		
	18	T	2.20	16	A	8	488	114	57	c	
	18		2.11	16	A	7	498	110	54		
	19		2.00	15	A	4	517	104	58		53
1–16	13	M	1.46	124	C	95	486	116	49	d	
	14		1.40	126	C	92	496	110	46		
	14		1.35	125	C	89	509	105	48		48
1–21	13	M	1.44	36	A	32	568	84	48	d	
	14		1.39	37	A	29	582	78	57		
	14		1.34	33	A	19	593	73	58		54
1–22	12	M	2.20	40	A	24	455	109	60	d	
	12		1.99	43	A	27	484	102	54		
	13		1.80	36	A	15	520	89	56		57
1–23	13	M	1.48	84	C	165	497	143	54	d	
	14		1.42	81	C	166	510	137	57		
	14		1.37	82	C	170	517	134	49		53
1–26	19	T	1.71	25	B	—3	531	100	60	d	
	20		1.69	27	B	—1	532	101	57		
	20		1.66	27	B	—9	540	97	61		59
1–27	17	T	2.50	18	A	1	453	111	64	c	
	18		2.21	18	A	—1	491	101	63		
	18		2.00	17	A	—4	519	94	63		
			Long method						69		63
1–31	19	T	1.70	14	A	—7	566	85	57	c	
	19		1.67	13	A	—9	569	83	55		
	20		1.64	13	A	—10	577	82	58		57
1949—Continued											
2– 4	18	T	1.92	34	B	—25	498	100	63	c	
	18		1.79	34	B	—30	509	95	60		
	19		1.74	34	B	—25	518	95	63		62
2– 8	22	T	1.81	17	A	—2	542	91	62	d	
	22		1.88	18	A	—2	526	92	54		
	23		2.00	18	A	8	504	106	53		56
2–14	22	T	1.64	20	A	24	548	109	52	d	
	22		1.69	20	A	16	540	104	48		
	22		1.77	20	A	15	522	105	43		48
2–16	18	T	1.80	45	B	—103	512	73	68	c	
	18		1.72	45	B	—103	520	72	62		
	18		1.67	47	B	—107	527	70	61		64
2–17	17	T	2.51	31	B	—75	431	94	63	c	
	17		2.20	32	B	—80	472	86	59		
	17		2.00	31	B	—81	499	81	62		
			Long method						47		61
2–18	17	T	2.19	37	B	—78	466	88	62	b	
	17		2.00	37	B	—78	490	84	60		
	18		1.80	38	B	—85	517	78	62		61
2–25	17	T	1.99	38	B	72	458	138	59	c	
	17		1.80	37	B	68	485	129	55		
	18		1.70	38	B	72	498	128	49		54
2–26	14	M	1.46	74	B	97	510	119	43	d	
	14		1.40	75	B	97	520	114	43		
	14		1.35	72	B	102	528	111	45		44
3– 5	13	M	2.00	99	C	128	395	164	45	d	
	13		1.79	96	C	125	433	148	49		
	14		1.50	93	C	122	484	125	44		46
3– 8	17	T	2.21	25	A	9	466	108	54	b	
	17		1.98	24	A	8	496	102	55		
	17		1.79	26	A	8	523	95	56		55
3–10	18	T	1.58	30	B	—20	537	91	49	c	
	18		1.51	35	B	—18	546	91	53		
	18		1.46	35	B	—18	549	90	48		50
3–12	16	T	2.50	12	A	22	459	142	48	c	
	17		2.00	13	A	27	505	129	48		
	19		1.35	24	A	44	575	115	48		
			Long method						22		48
3–17	16	T	2.50	13	A	70	417	201	44	c	
	17		2.00	12	A	63	493	168	43		
	18		1.50	14	A	57	562	135	42		
			Long method						49		43
3–18	17	T	2.00	28	B	210	453	185	60	d	
	17		1.80	28	B	196	485	168	57		
	18		1.50	37	B	213	511	155	53		57
3–20	20	T	1.20	30	B	24	599	93	49	d	
	20		1.21	31	B	28	597	95	50		
	21		1.22	32	B	26	593	95	52		50
3–26	13	M	2.00	87	C	55	421	121	42	d	
	13		1.80	90	C	54	453	109	48		
	14		1.50	83	C	54	505	95	45		
	18	T	1.31	57	C	6	548	89	47	c	
	18		1.26	63	C	2	555	86	45		
	19		1.24	69	C	6	553	88	49		46
3–27	13	M	2.00	82	C	50	428	117	40	d	
	13		1.80	76	C	54	457	109	40		
	14		1.50	78	C	56	504	96	37		39
3–28	13	M	2.01	98	C	66	410	129	48	d	
	13		1.80	99	C	58	442	115	43		
	14		1.51	99	C	67	493	103	46		46
3–29	13	M	2.01	90	C	49	417	118	41	d	
	13		1.80	93	C	50	452	110	47		
	14		1.50	89	C	51	498	96	38		42
4– 1	13	M	2.00	92	C	92	406	142	41	d	
	13		1.80	99	C	90	437	132	47		
	14		1.50	97	C	86	494	111	49		46
4– 2	13	M	2.00	56	B	24	454	91	32	d	
	13		1.80	53	B	20	486	83	34		
	14		1.50	51	B	20	535	75	36		34
4– 4	13	M	1.99	69	B	47	452	106	56	d	
	13		1.81	69	B	47	477	98	50		
	14		1.67	71	B	48	500	93	51		52
4– 5	13	M	2.51	37	A	—8	431	88	49	c	
	13		2.00	36	A	—13	500	74	49		
	14		1.50	31	A	—14	578	60	47		
			Long method						30		48
4– 6	13	M	2.01	55	B	33	459	100	56	d	
	13		1.80	51	B	30	489	92	50		
	14		1.50	48	B	25	546	78	57		54
1949—Continued											
4– 9	19	T	1.14	18	A	162	597	168	56	d	
	20		1.13	19	A	164	596	169	59		
	20		1.13	19	A	160	597	165	56		57
4–10	13	M	2.00	61	B	43	453	106	51	c	
	13		1.80	56	8	36	487	95	48		
	14		1.50	57	B	32	538	79	49		
	15	T	2.50	17	A	68	399	195	34	c	
	16		2.00	17	A	64	470	164	30		
	17		1.50	19	A	69	538	142	33		41
4–12	13	M	2.01	31	A	1	494	87	50	c	
	13		1.81	34	A	4	519	82	48		
	14		1.50	38	A	2	562	70	44		47
4–18	13	M	1.89	55	B	16	484	82	47	c	
	14		1.70	52	B	10	517	74	46		
	14		1.46	48	B	8	565	64	41		45
4–19	13	M	2.00	49	B	21	471	92	46	c	
	13		1.81	46	B	18	504	85	50		
	14		1.50	47	B	16	551	72	48		48
4–20	13	M	2.00	56	B	28	461	95	46	d	
	13		1.80	58	B	30	487	89	47		
	14		1.50	57	B	33	528	78	37		43
4–21	17	T	1.50	75	C	—54	520	66	48	c	
	17		1.44	75	C	—54	524	64	41		
	17		1.38	75	C	—54	549	62	47		45
4–22	13	M	2.00	40	A	—7	501	77	60	c	
	13		1.81	42	A	—6	521	72	55		
	14		1.50	40	A	—12	567	62	50		55
4–24	16	T	1.64	55	C	—28	505	79	48	c	
	17		1.50	57	C	—34	526	74	48		
	17		1.42	57	C	—35	541	71	48		48
4–26	13	M	1.99	31	A	—2	509	85	64	c	
	14		1.80	31	A	—2	537	79	62		
	14		1.51	28	A	—10	582	67	60		
	17	T	1.28	54	C	39	555	104	57	c	
	18		1.23	58	C	38	564	102	58		
	18		1.19	57	C	34	568	99	54		59
4–27	13	M	2.00	41	A	12	488	91	64	d	
	14		1.81	42	A	11	516	84	70		
	15		1.44	43	A	5	571	69	55		
	16	T	1.65	42	B	28	511	111	58	c	
	17		1.49	44	B	5	534	101	60		
	17		1.40	44	B	5	549	97	57		60
4–28	16	T	1.50	68	C	—10	514	87	51	c	
	17		1.33	68	C	0	543	88	53		
	17		1.28	71	C	5	546	90	53		52
4–30	14	M	1.80	35	A	—12	527	71	53	d	
	14		1.64	34	A	—15	556	66	52		52
5– 3	14	M	1.75	41	A	—11	534	67	53	d	
	14		1.67	42	A	—10	540	65	50		
	14		1.58	39	A	—14	548	60	49		51
5– 6	14	T	2.50	39	B	221	346	225	46	c	
	15		2.00	38	B	226	420	193	47		
	16		1.50	36	8	196	510	151	46		
			Long method						41		46
5– 7	13	M	2.00	38	A	—19	501	68	59	c	
	13		1.87	39	A	—22	518	64	51		
	14		1.78	36	A	—22	532	62	50		53
5– 8	13	M	2.00	27	A	—22	512	71	58	c	
	14		1.71	29	A	—23	551	62	56		
	15		1.50	29	A	—23	581	56	48		54
5– 9	14	M	1.58	28	A	—25	570	56	41	c	
	15		1.52	27	A	—28	581	54	41		
	15		1.47	27	A	—29	591	52	42		41
5–10	13	M	2.20	29	A	—28	486	70	43	c	
	13		2.00	27	A	—30	515	65	47		
	14		1.79	29	A	—31	547	61	50		
	15	T	2.00	52	C	174	393	210	60	c	
	16		1.80	53	C	187	421	200	59		
	16		1.65	51	C	185	449	186	57		52
5–11	16	T	1.50	94	D	171	433	204	66	d	
	17		1.43	92	D	158	453	185	64		
	17		1.37	96	D	171	463	189	68		66
5–12	13	M	2.20	10	A	—42	535	65	50	b	
	13		2.00	9	A	—44	560	60	52		
	14		1.80	9	A	—46	588	56	49		50
5–13	13	M	2.20	9	A	—37	535	70	49	b	
	13		2.00	10	A	—37	564	66	56		
	14		1.80	10	A	—39	593	61	59		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1949—Continued										
5–13	15	T	2.00	70	C 144	383	194	52	d	
	16		1.80	86	D 118	414	184	54		
	16		1.50	71	C 182	461	174	60		55
5–14	13	M	2.00	13	A −21	546	77	57	b	
	14		1.80	13	A −20	572	73	55		
	15		1.50	15	A −29	613	60	52		55
5–20	16	T	1.50	48	C 36	525	109	62	d	
	16		1.42	45	C 24	544	99	60		
	17		1.36	46	C 15	538	93	63		62
5–21	15	T	2.50	31	B 51	401	147	63	d	
	15		2.00	33	B 30	470	122	59		
	16		1.50	36	B 11	541	101	56		59
5–23	19	T	1.04	76	D 126	547	134	45	d	
	19		1.03	76	D 126	553	133	49		
	20		1.03	83	D 155	540	145	52		49
5–24	19	T	1.07	74	D 174	524	164	54	d	
	19		1.05	82	D 179	522	164	53		
	19		1.04	85	D 187	519	169	53		53
5–26	14	M	1.80	6	A −38	600	62	41	c	
	14		1.70	5	A −38	614	59	47		
	15		1.50	7	A −40	643	52	49		46
5–27	13	M	2.20	9	A −37	538	70	44	b	
	14		2.00	8	A −38	565	66	45		
	14		1.80	8	A −40	593	60	49		
	16	T	1.50	35	B 329	504	183	63	d	
	16		1.42	34	B 281	525	164	56		
	17		1.36	37	B 247	538	152	62		50
5–28	13	M	2.21	8	A −27	534	78	47	b	
	14		2.00	8	A −27	560	74	52		
	14		1.80	8	A −31	588	67	48		49
5–29	13	M	2.35	14	A −17	487	89	34	d	
	14		2.13	14	A −19	518	84	38		
	14		1.99	13	A −17	538	80	48		40
5–30	13	M	2.51	30	A −32	442	70	31	d	
	13		2.21	32	A −33	479	64	35		
	14		2.00	32	A −36	504	59	34		33
5–31	13	M	2.50	24	A −24	454	81	48	b	
	14		2.20	24	A −24	492	75	45		
	14		2.00	23	A −26	519	69	47		
	18	T	1.12	115	D 48	556	77	54	d	
	18		1.09	116	D 42	566	70	55		
	18		1.07	107	D 35	569	66	47		48
6– 1	13	M	2.50	29	A 19	421	118	39	p	
	13		2.20	30	A 18	462	108	37		
	14		2.00	29	A 11	498	96	43		
	16	T	1.50	30	B 24	547	103	50	c	
	16		1.42	31	B 28	557	102	50		
	17		1.35	27	B 24	573	98	46		49
6– 2	15	T	2.50	43	B 239	348	236	63	d	
	15		2.00	42	B 207	425	187	57		
	16		1.50	50	C 95	505	137	57		
			Long method					30		59
6– 4	18	T	1.18	98	D 185	477	179	47	d	
	18		1.15	98	D 193	487	182	60		
	18		1.13	93	D 188	495	177	52		53
6– 5	13	M	2.21	94	C 188	342	220	23	p	
	14		1.99	87	C 190	382	196	25		
	14		1.79	87	C 179	413	175	21		
6– 7	13	M	2.49	53	B 53	383	138	34	d	
	13		2.20	54	B 54	422	128	37		
	14		2.00	53	B 51	456	116	45		39
6– 9	15	T	2.01	100	D 113	349	188	26	d	
	15		1.80	104	D 116	383	175	35		
	16		1.50	101	D 105	444	148	34		32
6–11	16	T	1.50	126	D 156	404	179	32	d	
	16		1.42	129	D 166	412	179	30		
	17		1.36	125	D 167	426	175	31		31
6–13	15	T	1.99	119	D 148	324	216	32	d	
	16		1.80	124	D 163	350	214	46		
	16		1.50	126	D 180	399	199	47		42
6–14	16	T	1.80	108	D 127	374	185	33	d	
	16		1.63	108	D 132	402	177	33		
	16		1.50	109	D 142	423	173	37		34
6–15	14	M	2.20	12	A −47	523	60	33	d	
	14		2.00	11	A −48	550	57	34		
	14		1.80	11	A −49	575	53	31		33
6–16	14	M	2.20	16	A −13	488	87	27	d	
	14		2.00	16	A −17	526	79	40		
	14		1.82	15	A −19	553	73	41		36
1949—Continued										
6–19	19	T	1.04	84	D 17	593	60	54	d	
	19		1.03	83	D 21	592	63	53		
	19		1.02	85	D 26	592	66	54		54
6–20	17	T	1.30	36	B −118	590	57	41	d	
	17		1.24	32	B −114	602	56	38		
	17		1.19	33	B −118	614	54	39		39
6–21	17	T	1.24	179	D 113	479	115	54	d	
	17		1.20	188	D 120	485	116	56		
	18		1.16	178	D 109	494	109	52		54
6–23	16	T	1.42	147	D 68	472	93	46	d	
	17		1.36	151	D 71	482	93	47		
	17		1.30	147	D 71	495	92	45		46
6–24	15	T	2.50	55	C 67	349	166	46	c	
	15		2.00	55	C 55	421	138	43		
	16		1.50	55	C 35	507	109	46		
			Long method					44		45
6–25	13	M	2.52	4	A −40	542	75	49	b	
	14		2.20	4	A −40	580	70	45		
	14		2.00	4	A −42	603	65	46		
	16	T	1.58	67	C 16	488	103	42	c	
	16		1.50	69	C 13	496	99	39		
	16		1.42	67	C 8	514	95	40		45
6–26	15	T	2.00	34	B −16	473	105	54	c	
	16		1.79	31	B −39	512	92	54		
	16		1.50	37	B −16	542	92	52		53
6–27	15	T	2.00	29	B 91	458	143	37	d	
	16		1.80	33	B 148	472	154	44		
	16		1.50	36	B 179	512	147	47		43
6–28	16	T	1.56	25	A 37	533	116	37	d	
	16		1.50	25	A 36	543	112	40		
	16		1.42	25	A 36	555	111	35		37
6–29	15	T	2.50	23	A −6	441	98	61	c	
	15		2.00	23	A −8	507	86	62		
	16		1.50	27	A −2	560	78	54		
			Long method					41		59
6–30	15	T	2.50	18	A −15	450	92	54	b	
	15		2.21	18	A −17	489	84	48		
	15		2.00	17	A −19	516	79	50		51
7– 1	13	M	2.49	14	A −34	478	75	44	b	
	14		2.21	14	A −35	517	69	47		
	14		2.00	15	A −36	555	65	42		44
7– 2	14	M	1.95	23	A −3	522	87	49	c	
	14		1.80	22	A 0	544	84	53		51
7– 3	14	M	2.16	8	A −41	543	67	51	c	
	14		2.00	8	A −41	570	63	54		
	14		1.80	8	A −41	588	60	46		50
7– 5	15	T	2.51	18	A −12	449	96	57	b	
	15		2.13	17	A −12	496	88	56		
	16		1.79	17	A −15	542	79	57		57
7– 6	13	M	2.50	36	A −15	436	83	56	b	
	14		2.21	39	A −12	471	78	54		
	14		2.00	40	A −11	495	74	48		
	15	T	2.50	11	A −19	473	94	57	b	
	15		2.20	10	A −21	510	86	53		
	15		2.00	10	A −22	536	81	50		53
7– 7	13	M	2.50	18	A −34	463	75	41	d	
	14		2.21	20	A −33	501	69	47		
	14		2.00	22	A −31	529	66	53		
	16	T	1.46	44	C −37	555	70	56	c	
	17		1.39	48	C −38	570	68	62		
	17		1.34	50	C −36	571	68	59		55
7– 8	13	M	2.50	12	A −34	491	78	46	b	
	14		2.19	12	A −34	528	72	45		
	14		2.00	12	A −34	550	68	43		45
7– 9	14	M	2.20	27	A −17	483	79	47	b	
	14		2.00	30	A −14	507	76	49		
	14		1.80	30	A −9	533	75	48		
	15	T	2.50	43	B 91	358	167	43	b	
	15		2.20	43	B 82	403	151	42		
	15		2.00	38	B 60	441	134	44		46
7–10	15	T	2.00	107	D 85	379	150	51	d	
	16		1.80	112	D 89	404	144	53		52
7–17	13	M	2.50	19	A −25	464	83	48	b	
	14		2.20	18	A −26	505	75	45		
	14		2.00	18	A −29	533	69	45		46
7–18	13	M	2.50	23	A −29	454	76	38	c	
	14		2.20	19	A −33	501	69	40		
	14		2.00	21	A −34	531	64	41		40
1949—Continued										
7–20	17	T	1.35	136	D 55	490	81	41	d	
	17		1.29	140	D 54	498	78	40		
	17		1.23	141	D 59	509	80	45		42
7–21	17	T	1.31	69	C −42	549	66	47	c	
	17		1.25	67	C −39	558	66	41		
	18		1.20	68	C −33	562	68	40		42
7–22	16	T	1.62	35	B −99	536	69	44	c	
	16		1.50	34	B −103	555	65	47		
	17		1.42	37	B −106	567	63	45		45
7–24	16	T	1.50	51	C −38	534	71	46	d	
	17		1.42	52	C −40	549	68	52		
	17		1.36	49	C −35	557	68	54		51
7–25	16	T	1.61	26	B −19	541	92	49	d	
	16		1.50	28	B −17	555	90	51		
	17		1.42	30	B −12	561	90	48		49
7–26	16	T	1.80	27	B −77	527	79	56	d	
	16		1.68	28	B −76	541	76	51		
	16		1.50	28	B −70	560	74	49		52
7–27	16	T	1.50	51	C −46	539	67	51	c	
	17		1.40	51	C −46	555	64	51		
	17		1.32	51	C −50	572	60	52		51
7–28	17	T	1.41	27	B −107	588	61	53	c	
	17		1.35	25	B −106	596	59	50		
	17		1.29	36	B −105	606	58	51		51
8– 3	16	T	1.80	118	D 79	410	130	52	d	
	16		1.64	121	D 81	431	124	40		
	17		1.50	118	D 76	459	115	43		45
8– 5	13	M	2.20	20	A −29	500	72	37	c	
	14		2.00	17	A −32	532	67	45		
	15		1.50	14	A −35	614	53	46		43
8– 6	13	M	2.50	18	A −25	466	82	49	b	
	13		2.20	19	A −28	504	74	46		
	14		2.00	19	A −25	531	72	53		
	16	T	1.66	147	D 128	394	159	52	d	
	17		1.50	147	D 124	423	147	45		
	17		1.41	150	D 129	439	145	44		48
8– 8	15	T	2.51	33	B −93	422	87	46	c	
	16		2.00	30	B −93	496	77	56		
	17		1.50	32	B −111	568	63	54		
			Long method					46		52
8– 9	16	T	2.00	37	B −103	486	75	54	b	
	16		1.80	36	B −110	520	70	59		
	17		1.50	36	B −110	560	64	56		56
8–10	16	T	1.99	34	B −89	491	79	56	b	
	16		1.80	34	B −92	518	74	58		
	17		1.50	37	B −92	553	69	50		55
8–11	16	T	2.00	51	C −36	463	82	54	b	
	16		1.80	50	C −34	491	79	56		
	17		1.50	45	C −28	534	76	49		53
8–12	17	T	1.39	48	C 58	523	116	38	d	
	17		1.33	54	C 95	520	129	42		
	18		1.26	57	C 120	524	134	41		40
8–13	13	M	2.20	71	B 21	427	87	41	d	
	14		1.50	59	B 6	543	64	42		
	16	T	1.99	27	B −15	483	105	51	c	
	16		1.80	27	B −23	509	97	47		
	17		1.50	24	A −9	566	74	47		45
8–14	13	M	2.50	23	A −25	465	80	52	c	
	13		1.99	22	A −29	525	68	45		
	14		1.50	19	A −30	605	54	50		
	16	T	2.00	50	C −44	474	77	63	c	
	16		1.80	49	C −45	500	72	59		
	17		1.50	52	C −55	543	63	55		54
8–15	13	M	2.51	22	A −23	461	82	50	c	
	13		1.99	21	A −27	532	69	55		
	14		1.50	19	A −30	600	54	57		
	15	T	2.49	55	C −56	404	80	50	c	
	16		2.00	50	C −54	472	71	56		
	17		1.50	53	C −56	541	62	54		54
			Long method					43		
8–16	13	M	2.21	9	A −35	538	71	55	b	
	13		2.01	8	A −39	566	65	54		
	14		1.51	8	A −38	634	53	56		
	16	T	2.00	20	A −24	510	72	50	c	
	16		1.80	20	A −25	541	68	52		53
8–17	16	T	2.00	27	B −68	494	86	51	d	
	16		1.80	27	B −85	528	76	59		
	17		1.50	27	B −60	560	77	49		53

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1949—Continued											
8–18	13	M	2.50	23	A	−12	457	92	54	b	
	13		2.20	24	A	−14	494	84	59		
	13		2.00	24	A	−11	521	81	56		56
8–19	16	T	2.00	21	A	−21	513	74	57	b	
	16		1.80	22	A	−23	538	69	55		
	17		1.50	21	A	−26	582	61	52		55
8–20	13	M	2.50	11	A	−33	495	78	55	b	
	13		2.00	10	A	−36	560	67	53		
	14		1.50	9	A	−34	631	55	54		54
8–23	13	M	2.50	4	A	−38	518	78	46	c	
	13		2.01	3	A	−33	580	71	49		
	14		1.50	2	A	−29	644	59	53		
	17	T	1.36	102	D	26	518	67	40	d	
	17		1.31	98	D	22	532	64	37		
	18		1.26	96	D	20	540	62	43	b	46
8–24	13	M	2.50	12	A	−31	476	80	36		
	13		2.00	12	A	−28	540	72	41		
	14		1.50	12	A	−28	606	60	40		
	16	T	2.00	26	B	−114	506	69	57	b	
	16		1.80	26	B	−117	533	65	55		
	17		1.50	27	B	−130	572	57	52		47
8–26	13	M	2.51	48	B	15	403	102	37	c	
	13		2.00	47	B	14	472	86	41		
	14		1.50	42	A	12	552	72	46		
	17	T	1.50	131	D	54	470	87	48	d	
	17		1.38	141	D	57	491	83	51		47
8–27	13	M	2.51	64	B	29	389	106	33	d	
	13		2.00	60	B	24	460	89	37		
	14		1.50	56	B	19	541	69	39		36
8–28	13	M	2.50	30	A	48	418	145	50	d	
	13		2.20	28	A	57	452	141	50		
	13		2.00	27	A	44	491	121	50		
	19	T	1.13	74	C	−65	576	54	36	d	
	19		1.12	71	C	−64	581	54	36		
	20		1.11	68	C	−61	588	55	42		44
8–29	13	M	2.51	25	A	−1	444	102	54	d	
	13		2.00	22	A	−8	519	84	56		
	15	T	2.49	20	A	−24	460	80	57	b	
	16		2.00	20	A	−27	517	69	50		
	17		1.50	18	A	−32	592	57	50		
			Long method						50		53
8–30	13	M	2.51	19	A	−19	465	92	55	b	
	13		2.00	18	A	−20	533	76	53		
	14		1.50	17	A	−18	601	62	53		54
8–31	13	M	2.51	18	A	−18	462	88	44	c	
	13		2.00	15	A	−25	537	73	50		
	14		1.50	14	A	−29	614	57	53		
	16	T	2.00	15	A	−26	525	74	53	b	
	16		1.80	14	A	−28	556	69	52		
	16		1.69	14	A	−27	573	67	52		51
9– 1	18	T	1.24	36	B	−143	599	51	44	c	
	18		1.21	39	B	−143	601	51	46		
	18		1.19	39	B	−149	606	49	47		46
9– 2	13	M	2.51	32	A	−7	433	93	41	c	
	13		2.20	31	A	−4	475	88	50		
	13		2.00	32	A	−7	504	81	49		47
9– 5	13	M	2.07	22	A	−10	499	84	41	d	
	13		1.88	20	A	−12	527	79	36		
	13		1.76	21	A	−11	547	74	43		40
9– 6	15	T	2.49	63	C	−52	395	83	52	c	
	16		2.19	62	C	−52	433	77	49		
	16		1.99	64	C	−50	460	76	52		51
9–11	12	M	2.51	11	A	−31	487	80	48	c	
	13		2.20	10	A	−36	531	71	43		
	13		2.00	11	A	−37	557	65	49		
	17	T	1.41	50	C	−57	561	58	53	c	
	18		1.37	52	C	−59	567	57	54		
	18		1.33	48	C	−53	573	55	50		50
9–12	12	M	2.49	30	A	−3	441	98	48	b	
	13		2.01	30	A	4	496	90	52		
	14		1.50	31	A	9	570	76	54		51
9–13	12	M	2.50	30	A	−17	443	85	46	b	
	13		2.00	28	A	−18	512	74	45		
	14		1.50	31	A	−12	576	65	48		
	16	T	2.50	21	A	−9	450	97	60	c	
	16		2.00	21	A	−12	514	83	61		
	17		1.50	27	B	−51	564	80	54		
			Long method						33		50
1949—Continued											
9–15	12	M	2.50	16	A	−27	466	81	46	b	
	13		2.20	18	A	−24	509	77	52		
	13		2.00	17	A	−25	531	72	47		48
9–16	12	M	2.50	19	A	−30	464	76	42	d	
	13		2.01	20	A	−33	533	65	51		
	14		1.50	18	A	−42	603	52	41		
	18	T	1.35	44	B	−32	561	85	53	c	
	18		1.30	45	B	−28	564	85	49		
	18		1.27	48	C	−2	567	83	47		48
9–17	12	M	2.51	20	A	−32	465	75	46	b	
	13		2.00	21	A	−35	530	63	45		
	14		1.50	18	A	−44	608	51	45		
	16	T	2.20	26	B	−33	469	103	61	d	
	16		2.00	27	B	−32	491	99	61		
	16		1.80	30	B	−1	501	104	50		49
9–18	17	T	1.50	73	C	25	497	106	50	c	
	17		1.45	74	C	29	501	106	47		
	18		1.40	74	C	29	512	104	48		48
9–20	12	M	2.51	56	B	11	401	91	36	p	
	13		2.00	53	B	7	474	77	55		
	14		1.50	47	B	−3	558	61	48		
9–24	12	M	2.50	52	B	20	395	103	30	d	
	13		2.00	50	B	17	466	87	33		
	13		1.50	42	B	1	557	65	44		36
9–26	12	M	2.50	27	A	4	432	105	39	c	
	13		2.00	28	A	2	504	89	52		
	13		1.50	28	A	−2	573	71	45		45
9–27	12	M	2.50	33	A	−11	432	88	41	c	
	13		2.00	34	A	−13	502	75	53		
	13		1.50	30	A	−26	577	58	39		44
9–28	12	M	2.51	26	A	−5	441	97	52	b	
	13		2.00	25	A	−10	511	81	52		
	13		1.50	24	A	−11	591	65	59		54
9–29	12	M	2.50	36	A	15	421	111	55	b	
	12		2.20	37	A	16	461	103	56		
	13		2.00	36	A	15	488	96	53		55
10– 2	12	M	2.51	51	B	18	402	101	45	c	
	12		2.22	49	B	18	437	94	41		
	12		2.00	54	B	21	464	89	38		
	16	T	2.00	41	B	−113	483	73	56	c	
	16		1.78	41	B	−116	513	68	57		
	17		1.70	42	B	−109	525	68	53		48
10– 3	12	M	2.52	24	A	−18	451	87	47	c	
	12		2.21	22	A	−18	490	80	44		
	12		2.00	22	A	−20	521	75	53		48
10– 4	12	M	2.20	5	A	−30	551	77	53	b	
	12		2.00	7	A	−31	570	72	56		
	13		1.80	6	A	−32	600	67	55		
	16	T	2.50	74	C	−25	371	97	41	d	
	16		2.00	68	C	−34	441	86	37		
	17		1.50	85	D	39	493	97	41		
			Long method						27		50
10– 5	17	T	1.60	67	C	−55	501	83	38	d	
	18		1.50	71	C	−43	508	85	35		
	18		1.44	71	C	−38	520	82	39		37
10– 6	16	T	2.50	34	B	−120	426	76	48	c	
	16		2.20	37	B	−97	463	81	54		
	16		2.00	36	B	−107	489	74	54		52
10–10	18	T	1.45	114	D	22	506	60	48	d	
	18		1.40	101	D	16	520	60	45		
	19		1.38	101	D	17	524	61	43		45
10–11	17	T	2.00	108	D	19	434	71	57	c	
	17		1.90	104	D	17	448	68	54		
	17		1.80	108	D	17	459	66	51		54
10–12	12	M	2.50	22	A	−8	444	97	39	c	
	12		2.00	22	A	−11	517	82	49		
	13		1.50	21	A	−22	589	62	44		
	16	T	2.50	96	D	14	374	78	59	d	
	17		2.00	96	D	13	440	69	60		
	18		1.50	101	D	16	505	63	46		
			Long method						47		49
10–13	12	M	2.50	34	A	1	428	100	44	c	
	12		2.00	32	A	−2	502	85	55		
	13		1.50	30	A	−8	579	68	53		51
10–14	12	M	2.50	51	B	63	383	151	39	d	
	12		2.00	47	B	55	459	123	40		
	13		1.50	46	B	52	542	97	43		41
1949—Continued											
10–15	12	M	2.49	39	A	44	407	136	48	d	
	12		2.00	36	A	36	485	112	52		
	13		1.50	32	A	26	565	86	54		51
10–16	12	M	2.50	46	B	4	410	90	39	p	
	13		1.50	46	B	4	561	67	56		
10–17	12	M	2.51	34	A	80	404	172	54	d	
	12		1.99	32	A	59	482	132	60		57
10–19	12	M	2.49	24	A	14	435	116	46	c	
	12		2.00	23	A	7	514	95	53		
	13		1.50	24	A	10	577	79	46		48
10–20	12	M	2.50	22	A	25	446	127	59	c	
	12		2.20	18	A	10	497	106	57		
	12		1.99	19	A	3	528	93	60		59
10–23	12	M	2.49	17	A	−12	466	94	54	b	
	12		2.00	19	A	−14	533	80	53		
	13		1.50	19	A	−16	606	65	59		
	16	T	2.50	35	B	−88	426	90	58	c	
	17		2.20	38	B	−94	463	83	53		
	17		2.00	36	B	−101	489	76	50		54
10–24	12	M	2.49	29	A	−17	447	86	50	d	
	12		2.00	29	A	−20	516	72	56		
	13		1.50	27	A	−31	591	56	49		52
10–25	12	M	2.50	26	A	−9	450	93	59	b	
	12		1.99	26	A	−16	531	76	58		
	13		1.50	25	A	−26	596	59	55		
	18	T	1.70	32	B	−102	530	68	41	b	
	18		1.60	34	B	−106	543	67	41		
	19		1.50	33	B	−104	558	65	41		49
10–26	16	T	2.50	26	B	−106	443	81	46	b	
	17		2.20	28	B	−106	480	75	49		
	17		2.00	28	B	−106	504	72	49		
			Long method						27		48
10–27	12	M	2.51	20	A	3	458	108	60	b	
	12		2.00	18	A	−4	530	88	58		
	13		1.50	17	A	−10	606	69	59		
	16	T	2.50	48	C	−43	408	88	53	b	
	17		2.20	48	C	−44	445	81	53		
	17		2.00	50	C	−44	468	77	53		56
10–28	16	T	2.50	54	C	−5	390	115	57	c	
	17		2.20	56	C	−8	430	105	60		
	17		2.00	57	C	−11	460	99	51		56
10–29	16	T	2.50	71	C	−53	386	84	48	b	
	17		2.20	69	C	−53	429	77	53		
	17		2.00	65	C	−54	460	73	51		51
10–31	16	T	2.50	37	B	−109	424	82	54	b	
	17		2.20	39	B	−109	461	76	52		
	17		2.00	38	B	−110	485	73	48		51
11– 1	12	M	2.51	39	A	−4	424	92	46	b	
	12		1.99	38	A	−9	496	76	51		
	13		1.50	37	A	−23	573	57	49		
	16	T	2.50	37	B	−117	426	78	49	b	
	17		2.20	39	B	−118	465	73	51		
	17		2.00	37	B	−123	491	68	50		49
11– 2	12	M	2.49	34	A	−2	437	96	58	c	
	12		1.98	32	A	−10	509	79	52		
	13		1.50	29	A	−19	580	62	48		
	16	T	2.50	34	B	−100	430	84	52	b	
	17		2.20	34	B	−100	468	78	51		
	17		2.00	31	B	−103	497	74	52		52
11– 3	16	T	2.50	21	A	−14	452	91	56	b	
	17		2.20	22	A	−12	482	87	53		
	17		2.00	20	A	−18	517	78	52		54
11– 4	16	T	2.50	22	A	1	440	109	55	b	
	17		2.20	20	A	−4	481	97	54		
	17		2.00	21	A	−1	501	94	50		
			Long method						61		53
11– 5	12	M	2.48	74	B	195	319	284	57	d	
	12		2.00	69	B	151	416	201	65		
	13		1.50	57	B	153	511	145	66		
	16	T	2.50	24	A	−5	435	101	53	c	
	17		2.20	26	A	2	463	99	42		
	17		2.00	25	A	−6	495	87	42		53
11–10	12	M	2.50	49	B	94	371	189	42	d	
	12		1.99	50	B	88	448	152	44		
	13		1.50	50	B	95	526	123	40		42
11–11	17	T	2.20	31	B	−106	477	76	56	c	
	17		2.00	33	B	−107	504	73	60		
	18		1.90	32	B	−105	518	71	58		58

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1949—Continued										
11-12	12	M	2.21	30	A 51	459	136	56	c	
	12		2.00	32	A 57	487	130	61		
	13		1.50	31	A 57	560	103	59		
	17	T	2.50	27	B −116	450	77	53	b	
	17		2.20	28	B −118	484	71	49		
	17		2.00	28	B −120	512	67	55		
			Long method					65		55
11-13	17	T	2.50	20	A −28	470	75	58	b	
	17		2.20	21	A −27	494	71	54		
	18		2.00	22	A −27	517	68	51		54
11-16	13	M	1.55	49	B 57	535	103	47	d	
	13		1.41	47	B 58	562	94	48		48
11-17	17	T	2.50	42	B −129	422	74	51	b	
	17		2.20	43	B −136	458	78	47		
	18		2.00	45	B −140	483	64	50		49
11-18	12	M	2.50	17	A 48	446	150	62	d	
	12		2.00	16	A 39	516	122	54		
	13		1.50	14	A −11	610	70	57		
	17	T	2.50	42	B −126	424	75	56	b	
	17		2.20	41	B −133	458	69	47		
	18		2.00	45	B −131	482	67	52		54
11-19	12	M	2.51	16	A −13	472	97	59	c	
	12		1.99	14	A −16	540	80	52		
	13		1.50	14	A −26	618	62	63		58
11-20	11	M	2.51	22	A 12	447	115	60	c	
	12		1.99	20	A 7	520	96	55		
	13		1.50	20	A 3	595	76	61		59
11-21	12	M	2.50	31	A 57	415	152	54	d	
	12		2.00	29	A 49	489	125	57		
	13		1.50	28	A 44	570	97	58		56
11-22	17	T	2.50	61	C −48	391	86	41	b	
	17		2.20	61	C −51	431	78	44		
	18		2.00	60	C −51	457	75	42		
			Long method					47		42
11-23	12	M	2.50	26	A 51	415	148	42	d	
	12		2.00	25	A 42	500	121	55		
	13		1.50	23	A 33	578	92	51		49
11-25	17	T	2.50	57	C −63	403	75	47	b	
	17		2.20	55	C −60	444	71	53		
	18		2.00	57	C −58	465	70	49		50
11-27	17	T	2.50	79	D 8	383	81	56	c	
	18		2.20	81	D 9	421	75	56		
	18		2.00	82	D 10	445	72	53		55
11-28	17	T	2.50	69	C −60	397	78	54	c	
	18		2.20	64	C −53	435	77	52		
	18		2.00	64	C −53	458	74	48		51
11-29	17	T	2.50	56	C −55	401	80	47	c	
	18		2.20	52	C −40	444	78	54		
	18		2.00	53	C −44	466	77	49		50
11-30	12	M	2.50	26	A 83	416	179	62	c	
	12		2.21	24	A 75	465	159	63		
	12		1.99	23	A 70	499	143	64		63
12- 2	12	M	2.52	27	A 69	415	166	60	b	
	12		2.21	28	A 66	460	149	62		
	12		2.00	34	A 66	498	136	64		
	17	T	2.50	11	A −32	482	77	55	b	
	18		2.20	10	A −37	522	69	54		
	18		2.00	11	A −34	545	68	57		58
12- 4	17	T	2.50	18	A −27	461	78	51	b	
	18		2.20	18	A −25	498	75	54		
	18		2.00	19	A −23	513	74	49		
			Long method					36		51
12- 5	17	T	2.50	25	A −25	452	74	57	b	
	18		2.20	25	A −24	484	72	55		
	18		2.00	28	B −118	506	68	49		54
12- 8	12	M	1.98	32	A 16	494	99	56	c	
	12		1.81	31	A 14	523	90	56		
	13		1.50	30	A 5	574	75	56		56
12- 9	12	M	2.51	39	A 71	396	163	50	d	
	12		2.20	38	A 65	441	143	53		
	12		2.00	40	A 60	471	128	52		52
12-12	17	T	2.50	31	B −115	439	78	57	c	
	18		2.20	32	B −114	475	73	59		
	18		2.00	33	B −118	500	69	63		60
12-13	17	T	2.50	41	B −113	424	82	62	c	
	18		2.20	37	B −111	471	75	60		
	19		2.00	33	B −115	497	70	61		61
1949—Continued										
12-15	12	M	2.52	77	C 152	331	205	49	c	
	12		2.21	78	C 148	377	185	48		
	12		2.00	77	C 142	414	167	49		49
12-18	12	M	2.52	52	B 74	371	163	28	d	
	12		2.21	50	B 68	424	143	36		
	12		2.00	50	B 67	451	132	36		33
12-19	12	M	2.51	60	B 74	372	157	47	d	
	12		2.21	60	B 68	420	139	53		
	12		2.00	57	B 64	450	127	52		51
12-20	12	M	2.50	69	B 105	358	189	62	d	
	12		2.20	67	B 98	403	165	60		
	12		2.01	65	B 94	436	150	54		59
12-22	12	M	2.51	104	C 325	272	329	51	d	
	12		2.07	105	C 307	345	265	45		
	13		1.50	99	C 295	459	203	58		
	18	T	2.50	39	B −112	428	80	64	b	
	18		2.20	39	B −115	464	74	59		
	19		2.00	39	B −115	492	71	62		58
12-24	18	T	2.40	31	B −75	441	93	59	c	
	18		2.20	34	B −72	465	89	64		
	19		2.00	33	B −104	492	74	60		61
12-26	18	T	2.20	15	A −1	490	105	52	b	
	18		2.10	14	A −2	502	102	49		
	19		2.00	14	A −2	517	99	54		52
12-27	18	T	2.50	20	A −15	459	91	57	b	
	18		2.20	19	A −15	486	86	54		
	19		2.00	18	A −17	516	80	55		
			Long method					52		55
1950										
1- 1	18	T	2.20	21	A −21	482	77	50	c	
	18		2.10	24	A −17	492	80	54		
	19		2.00	25	A −16	507	77	62		55
1- 4	18	T	2.20	27	A −15	480	81	64	c	
	18		2.10	25	A −16	494	79	57		
	19		2.00	24	A −19	512	75	60		60
1- 5	18	T	2.20	9	A −30	523	76	53	b	
	18		2.10	9	A −32	536	73	55		
	19		2.00	9	A −36	549	68	53		54
1- 6	18	T	2.20	14	A −34	508	68	59	b	
	18		2.10	15	A −33	520	66	56		
	19		2.00	14	A −36	532	63	56		57
1-10	18	T	2.50	21	A −29	452	73	60	c	
	18		2.20	22	A −25	489	73	64		
	19		2.00	20	A −27	515	69	61		62
1-13	18	T	2.10	29	B −89	491	81	66	d	
	18		2.00	29	B −91	506	78	68		
	19		1.90	29	B −82	517	79	65		66
1-14	12	M	2.50	76	C 252	318	270	48	d	
	12		2.20	72	B 170	372	233	53		
	12		1.99	64	B 151	412	203	42		48
1-16	12	M	2.51	66	B 130	337	217	41	d	
	12		2.20	65	B 118	394	186	42		
	12		2.00	57	B 102	441	162	47		43
1-24	17	T	2.50	21	A −19	458	85	68	c	
	18		2.20	21	A −19	495	78	70		
	18		2.00	21	A −14	511	81	62		67
1-25	18	T	2.20	5	A −25	533	86	54	b	
	18		2.10	6	A −28	545	80	51		
	18		2.00	5	A −28	557	79	49		51
1-26	12	M	2.01	89	C 255	378	233	50	d	
	13		1.80	89	C 235	424	204	63		
	13		1.50	80	C 255	481	174	59		
	17	T	2.50	9	A −26	482	87	47	b	
	18		2.20	9	A −27	518	81	48		
	18		2.00	9	A −26	543	78	46		50
			Long method					44		
1-27	12	M	2.50	82	C 273	311	286	69	p	
	12		2.20	77	C 259	367	250	65		
	12		1.98	72	C 236	407	218	53		
1-28	12	M	2.50	67	B 125	348	211	56	d	
	12		2.21	68	B 123	387	190	50		
	12		2.00	61	B 122	422	177	49		52
1-29	12	M	2.52	74	B 129	337	213	62	d	
	12		2.20	72	B 124	388	188	56		
	12		2.00	70	B 124	427	175	64		61
1-30	12	M	2.50	76	C 211	331	245	64	c	
	12		2.20	81	C 207	373	220	61		
	12		2.00	76	C 216	403	208	61		62
1950—Continued										
2- 9	12	M	2.51	66	B 94	356	176	49	d	
	12		2.21	62	B 86	404	156	54		
	13		2.00	58	B 81	441	142	46		50
2-10	12	M	2.50	79	C 140	345	197	58	c	
	12		2.20	75	C 129	388	173	51		
	13		2.00	71	C 123	427	156	54		54
2-11	12	M	2.50	74	B 105	340	186	38	d	
	12		2.20	70	B 107	391	173	50		
	13		2.00	67	B 104	430	159	49		46
2-12	12	M	2.51	76	B 144	324	229	40	d	
	12		2.20	73	B 131	379	196	40		
	13		2.00	72	B 136	411	185	45		
	17	T	2.10	32	B 4	472	115	64	d	
	18		2.00	33	B −9	486	108	66		
	18		1.90	34	B −22	504	100	65		53
2-14	12	M	2.48	55	B 91	369	181	37	d	
	12		2.20	53	B 84	416	159	39		
	13		2.00	51	B 77	446	142	36		37
2-16	12	M	2.20	67	B 89	400	156	50	d	
	13		2.00	61	B 83	431	142	37		44
2-17	17	T	2.00	44	B −15	461	109	48	d	
	18		1.80	43	B −5	488	106	46		47
2-18	17	T	2.50	46	C 0	390	117	47	c	
	17		2.00	48	C 3	450	106	44		
	19		1.50	54	C 13	512	98	43		45
			Long method					30		
2-22	12	M	2.20	116	C 172	345	208	48	d	
	13		1.98	123	C 173	378	194	50		49
2-23	12	M	2.51	104	C 142	312	206	45	c	
	12		2.20	99	C 131	368	180	49		
	13		2.00	100	C 129	397	165	50		48
2-24	20	T	1.40	62	C −7	537	85	52	c	
	20		1.39	59	C −5	538	86	52		
	20		1.39	61	C −5	537	87	52		52
2-25	12	M	2.50	79	B 103	348	185	59	c	
	12		2.20	69	B 99	399	165	51		
	13		1.99	67	B 99	429	147	51		
	17	T	2.50	57	C 7	385	125	65	c	
	17		2.00	57	C −1	457	105	64		
	19		1.50	57	C 24	518	104	58		58
			Long method					45		
2-28	17	T	2.20	45	B 238	386	214	48	c	
	17		2.00	41	B 250	418	203	54		
	17		1.80	43	B 247	426	187	45		49
3- 3	18	T	1.70	48	C 48	488	123	63	c	
	18		1.60	49	C 57	499	123	55		
	18		1.50	51	C 39	519	111	57		58
3- 4	17	T	1.80	53	C −5	481	96	57	c	
	18		1.60	55	C −3	506	92	48		
	18		1.50	54	C −5	526	87	55		53
3- 6	13	M	1.82	62	B 72	468	124	45	c	
	13		1.62	60	B 70	502	111	50		
	14		1.51	59	B 69	524	104	48		48
3- 7	12	M	2.52	56	B 64	373	149	43	c	
	13		2.20	55	B 58	423	132	44		
	13		2.00	56	B 58	453	122	46		44
3- 9	12	M	2.50	88	C 164	311	216	30	d	
	13		2.21	87	C 163	358	196	38		
	13		1.99	87	C 161	393	180	34		34
3-10	16	T	2.50	4	A −28	513	90	47	d	
	17		2.00	4	A −23	556	85	37		
	18		1.50	6	A 8	607	110	35		40
			Long method					22		
3-15	12	M	2.50	74	B 129	337	215	55	c	
	13		2.00	71	B 117	421	169	54		54
3-16	17	T	1.80	24	A 43	500	132	43	c	
	17		1.60	24	A 40	531	122	44		
	18		1.50	24	A 35	553	114	45		44
3-22	13	M	1.96	53	B 52	466	116	37	d	
	13		1.81	43	B 43	498	106	36		
	13		1.67	48	B 44	520	99	36		36
3-23	16	T	2.50	25	B 61	407	150	48	c	
	16		2.00	26	B 52	474	129	49		
	17		1.50	30	B 50	538	111	43		47
			Long method					25		
3-25	12	M	2.50	83	C 110	340	177	45	d	
	13		2.21	80	C 111	381	162	49		
	13		2.00	75	C 109	415	149	41		45

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1950—Continued											
3–27	12	M	2.50	62	8	80	365	164	44	d	
	13		2.21	64	8	81	405	150	41		
	13		2.01	61	8	84	430	143	39		
	16	T	2.50	39	8	78	376	159	37	c	
	16		2.00	40	8	68	450	137	46		
	17		1.50	41	B	19	531	104	48		43
			Long method						61		
3–30	12	M	2.50	26	A	6	444	107	60	c	
	13		2.20	24	A	2	487	96	58		
	13		2.00	26	A	1	513	89	60		59
3–31	12	M	2.52	44	A	54	426	143	52	d	
	13		2.00	41	A	45	475	116	49		
	14		1.50	35	A	31	557	87	43		48
4– 1	12	M	2.50	38	A	42	409	134	49	c	
	13		2.01	34	A	30	481	108	47		
	14		1.50	34	A	20	565	82	50		
	16	T	2.20	63	C	5	401	115	41	c	
	16		2.00	65	C	1	432	106	41		
	16		1.80	68	C	—6	463	98	45		46
4– 2	12	M	2.50	22	A	2	450	107	55	d	
	13		2.21	22	A	10	496	104	63		
	13		2.00	20	A	—5	522	87	55		
	16	T	2.00	43	B	—80	471	85	57	b	
	16		1.80	41	8	—74	503	82	55		
	17		1.50	44	8	—74	543	76	59		57
4– 3	12	M	2.50	31	A	36	417	133	38	d	
	13		2.22	32	A	33	460	120	54		
	13		2.00	30	A	31	492	111	51		48
4– 4	12	M	2.50	18	A	4	453	109	46	c	
	13		2.20	18	A	1	497	98	51		
	13		2.00	17	A	0	526	91	52		
	16	T	2.00	54	C	155	403	198	68	d	
	16		1.80	56	C	163	434	189	70		
	17		1.50	55	C	180	472	172	56		55
4– 5	12	M	2.51	25	A	30	425	131	35	d	
	13		2.21	24	A	28	469	119	40		
	13		2.00	23	A	24	500	108	36		37
4–11	17	T	1.50	30	8	503	490	230	55	d	
	17		1.40	31	B	482	509	212	55		
	18		1.30	33	8	489	528	202	57		56
4–12	16	T	1.80	21	A	113	469	196	37	d	
	17		1.60	24	A	116	493	181	36		
	17		1.50	23	A	119	513	174	41		38
4–16	13	M	2.45	55	8	31	397	112	47	c	
	13		2.24	53	8	28	428	104	42		
	13		2.05	50	8	26	456	95	44		
	16	T	2.00	60	C	45	406	133	22	d	
	16		1.80	61	C	51	435	130	23		
	17		1.50	60	C	58	487	121	32		39
4–17	15	T	2.50	41	C	130	335	211	23	d	
	16		2.00	44	C	128	410	181	39		
	17		1.50	57	C	113	482	146	38		33
			Long method						45		
4–19	13	M	2.51	80	C	48	361	134	52	d	
	13		2.20	78	C	42	404	120	37		
	13		2.00	74	C	38	439	109	39		
	15	T	2.50	55	C	192	298	264	36	d	
	16		2.00	61	C	206	370	231	48		
	17		1.50	62	C	210	460	186	58		45
			Long method						26		
4–20	13	M	2.50	57	8	44	384	126	39	d	
	13		2.20	57	8	39	426	113	37		
	13		2.00	52	8	38	458	105	42		39
4–25	13	M	2.51	18	A	—4	453	102	44	c	
	13		2.01	16	A	—9	524	85	43		
	14		1.50	14	A	—16	606	67	50		46
4–26	13	M	2.50	16	A	—11	467	96	54	c	
	13		2.20	15	A	—11	508	89	47		
	13		2.01	14	A	—13	536	82	52		51
4–27	13	M	2.50	14	A	—13	469	95	40	d	
	13		2.20	15	A	—6	508	93	50		
	13		2.01	13	A	—8	538	87	54		48
4–28	13	M	2.52	13	A	—16	473	93	37	d	
	13		2.02	14	A	—19	543	78	50		
	14		1.50	11	A	—31	617	60	41		43
			Long method						65		
4–29	13	M	2.51	16	A	—18	463	97	41	c	
	13		2.20	14	A	—11	508	89	44		
	13		2.00	13	A	—14	535	82	45		43
1950—Continued											
4–30	13	M	2.52	13	A	—10	473	98	46	b	
	13		2.21	11	A	—14	521	88	49		
	13		2.00	11	A	—15	545	82	49		48
5– 1	13	M	2.51	16	A	—6	464	100	49	b	
	13		2.20	15	A	—5	504	94	43		
	13		2.01	17	A	—8	527	85	50		47
5– 2	13	M	2.50	17	A	—9	462	97	41	b	
	13		2.20	18	A	—8	505	90	48		
	13		2.00	15	A	—12	531	83	45		45
5– 8	17	T	1.30	18	A	99	580	147	54	d	
	18		1.20	20	A	96	597	137	57		
	18		1.10	20	A	86	619	127	46		52
5– 9	13	M	2.50	34	A	—15	431	84	47	c	
	13		2.00	35	A	—18	496	71	46		46
5–10	13	M	2.46	25	A	—9	447	93	40	c	
	13		2.20	22	A	—13	489	85	42		
	13		2.00	21	A	—14	514	79	38		
	15	T	2.50	33	B	156	380	192	62	d	
	15		2.00	35	8	157	450	172	65		
	16		1.50	36	8	142	531	138	62		52
			Long method						39		
5–12	13	M	2.49	50	8	26	409	111	46	c	
	13		2.20	46	8	23	449	102	47		46
5–13	13	M	2.50	86	C	131	325	193	35	d	
	13		2.21	92	C	112	373	166	43		
	13		2.01	86	C	108	411	150	42		40
5–15	13	M	2.49	39	A	—1	424	94	44	d	
	13		2.20	40	A	0	459	87	41		
	14		2.00	41	A	—1	489	81	60		
	16	T	1.80	73	C	167	391	198	35	d	
	16		1.60	78	D	138	414	192	30		
	16		1.50	83	D	131	431	184	25		40
5–16	17	T	1.40	67	C	189	464	169	36	d	
	17		1.30	68	C	203	482	164	36		
	17		1.20	74	C	239	494	167	47		40
5–17	13	M	2.50	18	A	—17	463	90	47	c	
	13		2.19	18	A	—17	502	83	43		
	14		2.00	17	A	—18	535	77	54		48
5–19	13	M	2.50	61	8	36	386	115	43	c	
	13		2.20	55	8	26	438	99	45		
	14		2.00	54	8	25	465	93	44		44
5–20	13	M	2.50	32	A	—16	440	85	41	c	
	13		2.20	32	A	—16	483	78	47		
	14		2.00	33	A	—19	508	71	51		46
5–21	13	M	2.50	24	A	—24	461	81	49	d	
	13		2.20	21	A	—26	504	74	53		
	14		2.01	22	A	—27	534	69	62		55
5–22	13	M	2.50	9	A	—34	500	79	50	b	
	13		2.20	9	A	—34	539	73	51		
	14		2.00	8	A	—36	569	67	54		52
5–23	13	M	2.51	7	A	—33	512	80	54	b	
	13		2.20	6	A	—36	547	72	49		
	13		2.02	5	A	—35	576	69	53		52
5–24	13	M	2.50	10	A	—25	500	86	51	b	
	14		2.00	9	A	—29	563	73	54		
	15		1.50	6	A	—33	634	55	45		50
5–25	13	M	2.50	10	A	—24	499	87	47	c	
	14		2.00	10	A	—26	558	74	45		
	15		1.50	13	A	—23	616	64	54		49
			Long method						52		
5–26	13	M	2.50	18	A	—12	466	100	48	b	
	13		2.20	18	A	—11	503	88	45		
	14		2.00	18	A	—11	528	83	47		47
5–27	13	M	2.50	43	A	48	404	138	43	d	
	13		2.20	41	A	46	448	115	51		
	14		2.00	40	A	41	485	104	50		48
5–28	13	M	2.50	30	A	7	441	107	59	c	
	13		2.20	28	A	2	480	95	45		
	14		2.00	28	A	1	513	88	58		54
5–29	13	M	2.50	7	A	—27	513	86	56	b	
	13		2.20	7	A	—27	549	79	52		
	14		2.00	6	A	—29	579	73	60		56
5–30	13	M	2.50	20	A	—26	471	81	58	b	
	13		2.20	19	A	—27	513	75	56		
	14		2.01	17	A	—27	540	71	62		59
5–31	13	M	2.51	50	8	16	418	99	56	c	
	13		2.20	49	8	23	456	88	62		
	14		2.00	42	A	3	485	84	52		57
1950—Continued											
6– 1	13	M	2.52	26	A	—16	446	87	48	c	
	13		2.20	28	A	—16	485	80	41		
	14		2.00	27	A	—21	515	72	48		46
6– 2	13	M	2.51	30	A	—17	455	85	47	c	
	13		2.20	31	A	—16	476	78	38		
	14		2.00	31	A	—18	508	72	49		
	15	T	2.00	83	D	91	384	168	48	d	
	16		1.80	86	D	99	415	164	56		
	16		1.50	83	D	87	472	139	50		48
6– 3	13	M	2.51	26	A	—8	443	94	46	b	
	13		2.20	26	A	—16	488	81	46		
	14		1.99	26	A	—16	517	76	51		48
6– 4	13	M	2.45	27	A	—17	458	86	44	b	
	13		2.20	24	A	—18	494	81	47		
	14		2.06	28	A	—15	505	77	48		46
6– 5	13	M	2.52	32	A	—19	441	82	49	b	
	14		2.00	31	A	—22	511	69	51		
	15		1.48	35	A	—20	588	56	54		51
6– 6	13	M	2.50	13	A	—36	485	75	47	c	
	13		2.20	13	A	—35	525	70	45		
	14		2.00	12	A	—37	554	64	51		48
6– 7	13	M	2.20	12	A	—36	526	69	45	b	
	14		2.00	11	A	—36	555	66	50		
	15		1.50	10	A	—43	630	54	51		
	15	T	2.00	17	A	—11	512	87	52	c	
	16		1.80	19	A	—13	539	80	53		
	16		1.50	20	A	—15	580	71	52		50
6– 8	13	M	2.50	6	A	—37	512	76	47	c	
	14		2.00	4	A	—40	575	66	46		
	15		1.50	3	A	—49	659	52	55		
			Long method						71		
	15	T	2.50	16	A	24	434	140	45	b	
	15		2.00	17	A	27	494	126	47		
	16		1.50	18	A	23	569	105	49		48
			Long method						48		
6– 9	13	M	2.51	6	A	—37	521	76	61	b	
	13		2.21	6	A	—37	560	71	64		
	14		2.00	7	A	—39	587	66	66		
	15	T	2.50	24	A	43	403	158	40	c	
	15		2.00	24	A	40	471	136	41		
	16		1.50	33	8	125	523	133	38		57
			Long method						43		
6–10	13	M	2.50	11	A	—35	501	76	50	b	
	14		2.00	10	A	—38	560	65	47		
	15		1.50	13	A	—33	616	55	45		47
6–11	13	M	2.51	8	A	—35	504	78	46	b	
	14		2.00	7	A	—40	574	65	50		
	15		1.50	6	A	—36	635	54	46		47
6–12	13	M	2.50	10	A	—29	493	83	42	b	
	14		2.00	9	A	—33	555	70	44		
	15		1.50	11	A	—31	623	56	49		45
6–13	13	M	2.51	7	A	—37	513	76	46	b	
	14		2.01	6	A	—41	576	64	54		
	15		1.50	4	A	—39	644	53	55		
			Long method						72		
	17	T	1.37	25	A	10	584	87	51	c	
	17		1.31	25	A	9	590	84	46		
	17		1.25	26	8	—17	599	83	47		51
6–14	13	M	2.50	9	A	—33	496	80	45	c	
	14		2.00	8	A	—35	564	68	52		
	15		1.50	6	A	—34	635	55	52		50
		T	Long method						49		
6–15	13	M	2.51	6	A	—38	513	75	61	c	
	14		2.00	6	A	—40	574	65	57		
	15		1.50	5	A	—39	639	53	50		56
6–16	13	M	2.51	7	A	—37	506	76	44	b	
	14		2.00	4	A	—43	574	64	42		
	15		1.50	3	A	—49	649	52	44		
	15	T	2.00	14	A	43	478	145	29	c	
	16		1.80	16	A	36	509	130	31		
	16		1.50	20	A	39	544	118	31		40
6–17	13	M	2.50	17	A	—30	470	77	50	b	
	14		2.21	17	A	—31	512	70	46		
	14		2.00	16	A	—33	539	66	53		50
6–18	13	M	2.51	17	A	—32	474	77	54	d	
	14		2.00	17	A	—34	541	66	56		
	15		1.50	15	A	—34	607	53	40		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1950—Continued											
6–18	15	T	2.00	33	B	64	445	134	29	c	
	16		1.80	35	B	57	473	126	30		
	16		1.50	39	B	67	514	117	32		40
6–19	13	M	2.52	22	A	−24	475	82	66	d	
	14		2.00	19	A	−30	540	68	55		
	15		1.50	19	A	−30	615	54	60		60
6–21	18	T	1.16	56	C	20	563	91	34	d	
	18		1.10	58	C	13	577	86	36		
	18		1.07	50	C	53	576	97	43		38
6–22	15	T	2.50	39	B	215	343	223	45	d	
	15		2.00	43	B	194	422	183	45		
	16		1.50	48	C	150	491	159	56		49
			Long method						32		
6–23	13	M	2.50	17	A	−21	481	86	60	c	
	14		2.00	14	A	−34	552	66	49		
	15		1.50	11	A	−42	630	54	56		
	15	T	2.00	81	D	89	404	167	70	d	
	16		1.80	74	D	92	433	163	64		
	16		1.50	79	D	82	486	135	58		57
6–24	13	M	2.50	7	A	−42	515	72	48	b	
	14		2.00	6	A	−55	579	53	45		
	15		1.50	4	A	−51	645	51	42		
	15	T	2.00	49	C	16	451	113	58	d	
	16		1.80	46	C	8	481	102	58		
	16		1.50	42	8	−6	534	97	53		48
6–25	13	M	2.50	6	A	−41	521	74	56	b	
	14		2.21	6	A	−41	551	68	49		
	14		2.00	6	A	−43	581	63	49		
	15	T	2.00	7	A	24	517	131	22	d	
	15		1.80	6	A	22	545	124	22		
	16		1.50	9	A	23	576	111	22		47
6–26	15	T	2.50	23	A	11	433	121	52	d	
	15		2.00	22	A	7	499	103	54		
	16		1.50	22	A	5	571	86	53		53
			Long method						81		
6–27	15	T	2.00	24	A	25	489	120	57	d	
	16		1.80	23	A	26	506	114	55		
	16		1.50	23	A	20	560	100	48		53
6–29	15	T	2.00	29	8	−2	473	110	45	d	
	16		1.80	27	B	−7	502	102	42		
	16		1.50	37	8	40	518	109	34		40
7– 1	13	M	2.50	13	A	−24	485	75	55	b	
	14		2.20	13	A	−25	526	69	56		
	14		2.00	13	A	−24	548	67	53		55
7– 9	13	M	2.44	36	A	−13	437	84	37	d	
	13		2.29	32	A	−19	465	79	33		35
7–11	15	T	2.20	50	C	−21	431	96	48	c	
	16		2.00	55	C	−19	457	93	50		
	16		1.80	57	C	−17	476	90	43		47
7–12	15	T	2.00	54	C	26	430	120	42	d	
	16		1.80	58	C	27	454	114	39		
	16		1.50	76	D	61	476	117	32		38
7–14	13	M	2.50	53	8	19	397	100	31	p	
	14		2.20	50	B	14	441	89	33		
	14		2.00	49	B	13	466	84	28		
7–15	15	T	2.00	109	D	70	382	129	38	d	
	16		1.80	110	D	71	410	124	39		
	16		1.50	115	D	71	458	112	34		37
7–17	15	T	2.00	150	D	71	381	108	68	d	
	16		1.80	151	D	70	408	104	63		
	16		1.50	150	D	64	461	89	54		62
7–18	15	T	2.50	21	A	−10	441	95	54	c	
	15		2.20	22	A	−10	479	89	55		
	15		2.00	21	A	−11	507	84	56		55
7–19	13	M	2.51	41	A	10	416	103	49	c	
	14		2.20	41	A	3	457	89	44		
	14		2.00	37	A	−2	482	82	39		
	16	T	1.50	128	D	44	476	78	45	d	
	17		1.40	133	D	46	496	74	52		
	17		1.30	136	D	47	512	72	52		46
7–20	13	M	2.52	34	A	−4	431	95	49	c	
	14		1.99	33	A	−1	498	85	46		
	15		1.49	35	A	−12	579	61	52		
	15	T	2.20	137	D	52	367	97	61	d	
	15		2.00	148	D	56	389	95	61		
	16		1.80	150	D	57	423	89	66		53
7–21	13	M	2.20	11	A	−37	532	69	49	c	
	14		1.98	11	A	−40	565	63	55		
	15		1.50	10	A	−38	634	52	55		53
1950—Continued											
7–22	13	M	2.50	12	A	−27	489	82	45	c	
	14		2.00	11	A	−33	553	68	43		
	15		1.50	10	A	−43	628	54	47		45
			Long method						56		
7–25	13	M	2.50	15	A	−19	474	89	49	b	
	13		2.20	14	A	−24	518	80	46		
	14		2.00	13	A	−24	541	75	48		48
7–28	13	M	2.50	29	A	3	447	107	36	d	
	14		2.00	19	A	−11	519	83	38		
	15		1.49	21	A	−1	590	71	47		
	17	T	1.40	78	D	9	533	61	47	c	
	17		1.30	76	D	5	552	58	51		
	18		1.20	82	D	6	562	56	43		45
7–29	13	M	2.50	26	A	9	442	110	53	d	
	14		1.99	28	A	1	511	88	57		
	15		1.49	25	A	−17	586	61	49		
	15	T	2.50	46	C	−30	403	96	48	c	
	16		2.00	45	C	−34	470	82	48		
	17		1.50	49	C	−40	542	69	53		51
			Long method						44		
7–30	16	T	1.80	101	D	104	393	164	31	d	
	16		1.50	94	D	102	448	148	29		
	17		1.40	97	D	102	466	141	30		30
7–31	16	T	2.00	164	D	144	324	191	58	d	
	16		1.80	167	D	149	357	181	61		
	16		1.60	165	D	164	382	180	53		57
8– 1	13	M	2.50	21	A	−22	446	84	42	c	
	13		2.20	20	A	−20	498	79	50		
	14		1.98	19	A	−25	530	72	44		45
8– 2	13	M	2.52	15	A	−32	483	78	52	b	
	14		2.00	14	A	−33	545	68	51		
	15		1.49	13	A	−38	627	51	56		
	17	T	1.40	70	C	−55	540	61	46	c	
	17		1.30	68	C	−63	560	57	40		
	18		1.20	66	C	−68	570	55	38		50
8– 3	13	M	2.47	16	A	−33	487	75	63	c	
	14		2.00	15	A	−36	550	65	66		
	15		1.50	13	A	−35	625	53	61		
	15	T	2.50	93	D	18	364	86	43	c	
	16		2.00	92	D	18	431	77	47		
	17		1.50	94	D	19	505	68	43		54
			Long method						36		
8– 4	13	M	2.50	6	A	−37	519	76	51	b	
	14		2.00	5	A	−41	582	65	52		
	15		1.50	3	A	−43	652	57	52		
	16	T	1.70	54	C	−17	496	86	49	c	
	16		1.60	48	C	−25	516	79	42		
	17		1.50	53	C	−31	529	77	44		50
8– 5	13	M	2.50	15	A	−25	475	84	49	b	
	14		2.00	14	A	−30	545	70	53		
	15		1.50	10	A	−32	624	56	50		
	17	T	1.50	32	8	−82	557	71	50	b	
	17		1.40	32	8	−72	571	71	49		
	17		1.30	32	8	−74	590	68	52		51
8– 6	13	M	2.49	6	A	−37	520	76	43	c	
	14		2.00	6	A	−40	580	65	54		
	15		1.50	4	A	−42	648	52	56		
	16	T	2.50	33	B	−76	422	95	46	b	
	16		2.00	31	8	−73	488	85	51		
	17		1.50	35	8	−85	559	71	56		51
			Long method						51		
8– 7	13	M	2.50	22	A	−16	457	90	53	b	
	13		2.00	25	A	−18	521	75	50		
	15		1.50	29	A	−15	585	61	53		
	16	T	1.80	18	A	−17	543	76	54	b	
	16		1.60	21	A	−16	567	71	50		
	17		1.50	24	A	−9	570	74	48		52
8– 8	13	M	2.50	47	A	3	425	94	56	b	
	13		2.00	45	A	−2	490	82	53		
	15		1.47	41	A	−7	578	60	60		
	16	T	1.60	75	D	10	504	68	50	d	
	17		1.50	77	D	11	522	66	56		
	17		1.40	82	D	12	532	63	49		55
8– 9	13	M	2.50	38	A	−13	440	82	55	c	
	13		2.01	39	A	−16	500	71	51		
	15		1.49	34	A	−13	578	60	51		52
8–10	13	M	2.51	36	A	−8	432	89	47	c	
	13		2.00	33	A	−16	502	73	49		
	15		1.49	32	A	−23	585	55	55		50
1950—Continued											
8–11	17	T	1.50	27	B	−57	564	78	55	c	
	17		1.30	26	B	−56	594	72	49		
	18		1.20	26	B	−72	612	66	50		51
8–14	13	M	2.50	25	A	−22	450	84	47	c	
	13		2.00	26	A	−17	516	75	46		46
8–19	13	M	2.20	8	A	−30	550	76	62	c	
	13		2.00	7	A	−31	572	72	57		
	14		1.80	7	A	−32	596	67	54		58
8–20	13	M	2.50	12	A	−22	491	88	51	b	
	13		2.00	11	A	−27	552	73	57		
	14		1.48	10	A	−30	629	57	52		53
8–21	13	M	2.48	8	A	−28	506	84	50	b	
	13		2.01	7	A	−31	566	72	50		
	14		1.50	7	A	−36	638	54	52		51
8–24	13	M	2.50	28	A	33	416	135	34	d	
	13		2.00	28	A	21	490	104	40		
	14		1.50	24	A	8	579	78	42		39
8–25	13	M	2.49	19	A	26	443	128	40	d	
	13		2.00	18	A	14	524	102	53		
	14		1.50	15	A	2	598	77	53		49
8–26	13	M	2.49	17	A	20	456	125	48	c	
	13		2.00	15	A	3	531	95	51		
	14		1.50	13	A	−4	606	72	46		48
8–27	13	M	2.51	16	A	2	458	108	47	c	
	13		2.20	17	A	5	495	101	45		
	13		2.01	17	A	3	526	93	57		50
8–31	13	M	2.20	12	A	−30	520	75	42	b	
	13		2.00	11	A	−29	547	71	46		
	14		1.50	12	A	−32	613	59	46		
	15	T	2.50	127	D	112	269	197	44	d	
	16		2.20	135	D	122	305	189	34		
	16		2.00	137	D	121	333	177	34		42
9– 2	13	M	2.48	21	A	−2	444	101	36	d	
	13		2.00	20	A	−10	511	83	33		
	14		1.50	17	A	−19	590	64	35		35
9– 5	12	M	2.53	16	A	−23	480	85	46	d	
	13		1.99	12	A	−30	549	70	46		
	14		1.50	8	A	−45	630	54	48		47
9– 9	13	M	2.00	22	A	−18	512	76	38	d	
	14		1.50	20	A	−27	590	60	37		38
9–11	12	M	2.46	12	A	3	473	107	39	d	
	13		2.00	13	A	−10	532	85	42		
	14		1.50	12	A	−19	610	65	46		
	16	T	2.50	37	B	57	379	150	34	d	
	16		2.00	42	B	56	442	133	38		
	17		1.50	41	B	13	526	102	38		40
			Long method						62		
9–12	12	M	2.51	8	A	−23	498	88	47	b	
	13		2.00	6	A	−29	564	73	46		
	14		1.50	4	A	−36	640	59	47		
	16	T	1.80	23	A	29	516	117	56	d	
	17		1.60	22	A	24	544	107	49		
	17		1.50	30	A	45	538	117	45		48
9–13	12	M	2.52	7	A	−18	503	94	46	c	
	13		2.00	7	A	−22	568	79	54		
	14		1.50	5	A	−33	644	61	54		51
			Long method						73		
9–14	16	T	2.00	22	A	15	508	111	57	d	
	16		1.80	26	B	12	516	108	54		
	17		1.50	31	B	48	541	111	49		53
9–16	16	T	2.50	20	A	−5	448	103	58	c	
	16		2.20	19	A	−5	481	97	51		
	16		2.00	22	A	2	500	97	53		54
9–18	16	T	2.20	57	C	−26	431	95	58	c	
	16		2.00	57	C	−22	456	92	57		
	16		1.80	58	C	−28	484	83	56		57
9–19	16	T	2.50	50	C	52	348	153	24	d	
	16		2.20	47	C	37	401	133	30		
	16		2.00	48	C	30	434	122	36		30
9–20	16	T	2.50	64	C	−2	369	119	42	c	
	16		2.00	64	C	0	436	106	41		
	17		1.50	63	C	−10	514	186	43		42
			Long method						35		
9–21	17	T	1.60	63	C	−3	496	93	42	c	
	17		1.50	67	C	−4	508	90	44		
	18		1.40	76	C	−7	519	88	43		43

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1950—Continued											
9–22	16	T	2.50	48	C	35	370	141	51	d	
	16		2.00	51	C	53	428	136	38		
	17		1.50	61	C	115	470	147	35		41
			Long method						24		
9–23	12	M	2.42	26	A	—29	453	80	29	d	
	13		2.00	26	A	—21	514	68	46		
	13		1.50	25	A	—27	589	56	48		41
9–24	12	M	2.50	21	A	—23	469	83	58	b	
	12		2.21	21	A	—23	504	72	53		
	13		2.01	20	A	—27	532	70	54		55
9–25	12	M	2.50	18	A	—12	456	94	46	b	
	13		2.00	18	A	—17	530	78	51		
	13		1.50	16	A	—30	603	59	44		
	17	T	1.50	72	C	—43	515	71	44	c	
	18		1.40	67	C	—40	536	66	44		
	18		1.36	68	C	—43	541	67	43		46
9–26	12	M	2.51	16	A	0	462	106	47	d	
	13		1.99	15	A	—11	532	84	43		
	13		1.49	12	A	—23	607	64	36		42
9–27	12	M	2.47	28	A	80	411	175	50	d	
	12		2.20	28	A	75	451	156	53		
	13		2.00	25	A	71	478	143	46		
	16	T	2.50	86	D	29	360	105	51	d	
	16		2.00	83	D	28	429	94	48		
	17		1.50	85	D	47	490	100	43		48
			Long method						31		
9–28	16	T	2.50	52	C	—54	406	80	53	c	
	16		2.00	49	C	—55	477	70	57		
	17		1.50	47	C	—57	550	60	55		55
			Long method						45		
9–29	16	T	2.50	54	C	—57	408	78	62	c	
	16		2.20	53	C	—53	447	75	64		
	16		2.00	50	C	—52	471	72	54		60
9–30	16	T	2.50	25	B	39	413	140	49	d	
	16		2.00	27	B	38	482	124	55		
	17		1.50	29	B	163	534	142	48		51
			Long method						35		
10– 1	16	T	2.50	9	A	—11	476	106	50	b	
	16		2.20	9	A	—13	512	96	44		
	16		2.00	9	A	—13	537	91	43		46
10– 2	16	T	2.50	13	A	—28	479	81	54	b	
	16		2.00	12	A	—29	537	73	47		
	17		1.50	13	A	—31	607	61	51		51
			Long method						45		
10– 3	16	T	2.50	22	A	—19	452	85	56	b	
	16		2.20	22	A	—22	491	76	54		
	17		1.80	23	A	—21	540	70	54		55
10– 4	16	T	2.50	39	B	—48	413	108	59	c	
	16		2.20	39	B	—65	456	94	57		
	16		2.00	42	B	—70	480	88	60		59
10– 5	12	M	2.20	18	A	—16	492	84	36	d	
	12		2.00	18	A	—18	522	77	38		
	13		1.50	17	A	—31	591	58	30		
	16	T	2.50	59	C	—47	399	86	50	b	
	16		2.00	60	C	—50	463	75	50		
	17		1.50	57	C	—47	535	67	49		46
			Long method						37		
10– 6	12	M	2.29	13	A	—29	499	77	32	d	
	12		2.00	13	A	—31	538	69	37		
	13		1.50	13	A	—42	610	56	35		35
10– 8	12	M	2.50	17	A	—6	456	99	40	d	
	12		2.00	17	A	—12	520	82	36		
	13		1.50	16	A	—23	593	63	33		
	17	T	1.60	62	C	—20	512	83	54	c	
	18		1.50	64	C	—23	517	80	46		
	18		1.40	70	C	—31	533	73	48		44
10– 9	12	M	2.52	15	A	—12	472	96	47	c	
	12		2.00	14	A	—16	542	80	45		
	13		1.49	12	A	—26	610	62	43		
			Long method						56		
	17	T	1.70	56	C	—35	505	77	59	d	
	17		1.60	57	C	—19	514	84	53		49
10–12	12	M	2.40	15	A	36	468	137	53	c	
	12		1.97	15	A	38	528	121	53		
	12		1.50	14	A	37	601	97	59		55
10–13	12	M	2.13	7	A	—10	552	91	56	d	
	12		2.00	5	A	—16	570	84	57		56
1950—Continued											
10–18	16	T	2.20	87	D	32	399	101	48	c	
	17		2.00	88	D	30	430	94	52		
	17		1.80	86	D	31	455	91	46		49
10–19	16	T	2.50	59	C	3	376	122	50	c	
	16		2.20	57	C	—11	422	104	51		
	17		2.00	58	C	—5	450	102	53		51
10–20	16	T	2.50	34	B	—30	414	114	56	b	
	16		2.20	33	B	—26	456	107	57		
	17		2.00	34	B	—30	482	100	56		56
10–21	16	T	2.50	18	A	2	440	113	44	c	
	17		2.00	16	A	—3	510	96	43		44
			Long method						49		
10–26	17	T	2.00	60	C	9	456	111	56	d	
	17		1.90	67	C	—1	460	103	61		
	17		1.80	71	C	0	469	101	62		60
10–28	16	T	2.50	50	C	63	368	161	56	c	
	17		2.20	54	C	57	406	146	58		
	17		2.00	55	C	47	440	133	63		59
			Long method						40		
10–29	17	T	2.20	49	C	—34	445	87	56	c	
	17		2.00	46	C	—32	477	84	60		
	17		1.90	48	C	—35	488	81	56		57
10–30	18	T	1.57	49	C	28	513	106	53	c	
	19		1.55	50	C	27	519	106	58		
	19		1.53	50	C	29	522	106	54		55
11– 1	16	T	2.50	41	B	—96	416	89	51	b	
	17		2.20	42	B	—98	456	82	53		
	17		2.00	41	B	—99	478	78	50		51
11– 2	17	T	2.20	76	C	—35	419	92	53	b	
	17		2.00	70	C	—41	451	82	48		
	17		1.90	68	C	—41	468	80	49		50
11– 4	16	T	2.50	49	C	0	370	117	54	b	
	17		2.20	48	C	—1	433	108	58		
	17		2.00	49	C	4	460	106	59		57
11– 5	16	T	2.50	49	C	0	392	117	53	d	
	17		2.20	48	C	—1	434	108	52		
	17		2.00	52	C	26	448	114	54		53
			Long method						25		
11– 6	17	T	2.50	34	B	—64	422	99	54	c	
	17		2.20	32	B	—83	463	85	43		
	17		2.00	33	B	—76	487	84	45		47
11– 8	17	T	2.50	40	B	—47	406	109	48	c	
	17		2.20	41	B	—23	438	110	47		
	17		2.00	41	B	—46	471	97	47		47
			Long method						30		
11–15	11	M	2.50	23	A	—12	450	92	45	c	
	12		2.00	20	A	—16	523	78	45		
	13		1.50	18	A	—22	607	63	56		49
11–19	11	M	2.50	22	A	2	455	106	55	c	
	12		2.20	20	A	—3	493	93	47		
	12		2.00	19	A	—3	521	88	51		51
11–21	11	M	2.47	25	A	13	440	115	47	c	
	12		2.00	27	A	19	506	103	55		
	13		1.50	26	A	8	584	77	54		
	17	T	2.50	92	D	23	367	94	57	d	
	17		2.20	97	D	26	405	89	57		
	18		2.00	108	D	30	427	84	63		54
11–23	12	M	1.94	20	A	2	531	90	57	d	
	12		1.76	20	A	0	563	84	58		
	12		1.62	17	A	—1	576	78	49		
	17	T	2.50	34	B	—44	418	108	56	b	
	17		2.20	37	B	—47	454	100	53		
	18		2.00	36	B	—48	482	95	56		55
11–25	11	M	2.50	23	A	16	436	131	41	d	
	12		2.00	20	A	17	510	104	39		
	13		1.50	17	A	10	593	80	54		45
11–26	17	T	2.50	18	A	—5	452	104	53	b	
	18		2.20	21	A	—4	484	96	57		
	18		2.00	22	A	—4	506	91	55		55
11–27	11	M	2.50	24	A	44	426	144	40	d	
	12		2.00	21	A	38	501	119	43		
	13		1.50	18	A	35	580	93	45		
			Long method						61		
	17	T	2.50	28	B	—62	430	108	47	b	
	18		2.20	28	B	—64	468	92	48		
	18		2.00	30	B	—65	494	87	52		47
			Long method						39		
1950—Continued											
11–28	17	T	2.50	31	B	—64	426	99	50	c	
	18		2.20	33	B	—65	462	93	47		
	18		2.00	32	B	—55	486	91	49		49
11–29	17	T	2.50	35	B	—63	422	101	59	c	
	18		2.20	38	B	—68	454	93	49		
	18		2.00	36	B	—65	483	89	50		53
12– 1	12	M	2.51	56	B	141	347	235	44	d	
	12		2.00	48	B	133	432	193	40		
	13		1.50	46	B	123	520	146	35		40
12– 2	12	M	2.50	56	B	112	360	203	46	d	
	12		2.00	58	B	109	435	167	49		
	13		1.50	48	B	95	526	125	41		45
12– 3	12	M	2.50	35	A	51	413	145	56	c	
	12		2.00	33	A	42	490	118	58		
	13		1.50	31	A	32	572	89	61		58
12– 5	17	T	2.50	27	B	—85	441	90	59	b	
	18		2.20	28	B	—87	478	83	58		
	18		2.00	28	B	—87	502	79	56		58
12– 8	17	T	2.50	27	B	—85	441	90	59	b	
	18		2.20	28	B	—87	478	83	58		
	18		2.00	28	B	—87	502	79	56		58
12– 9	17	T	2.50	33	B	—104	434	83	51	b	
	18		2.20	35	B	—105	469	77	49		
	18		2.00	35	B	—111	495	72	49		50
			Long method						51		
12–10	17	T	2.50	29	B	—108	435	80	46	b	
	18		2.20	29	B	—105	473	76	44		
	18		2.00	30	B	—99	495	75	45		45
12–17	12	M	2.50	103	C	139	321	203	57	d	
	12		2.20	98	C	129	368	177	56		
	12		2.00	100	C	123	406	162	65		
	17	T	2.50	37	B	—61	417	102	53	b	
	18		2.20	39	B	—73	454	91	51		
	18		2.00	43	B	—75	475	87	55		55
			Long method						51		
12–19	12	M	2.51	92	C	166	320	218	48	c	
	12		2.20	90	C	155	367	192	44		
	12		2.00	88	C	153	403	176	48		
	17	T	2.50	59	C	—30	393	94	52	c	
	18		2.20	63	C	—24	430	96	56		
	19		2.00	62	C	—27	454	89	49		50
12–20	12	M	2.50	100	C	204	302	246	43	d	
	12		2.22	99	C	196	346	214	40		
	18	T	2.50	27	B	—35	426	111	53	b	
	18		2.20	30	B	—40	459	101	49		
	19		2.00	33	B	—31	477	100	49		48
12–21	12	M	2.51	102	C	259	291	283	44	d	
	12		2.00	91	C	244	382	227	45		
	13		1.49	87	C	238	478	175	52		
			Long method						89		
	18	T	2.50	35	B	—57	419	103	54	c	
	18		2.20	34	B	—67	459	92	50		
	18		2.10	34	B	—64	473	91	49		49
12–22	12	M	2.50	86	C	163	323	216	44	d	
	12		1.99	84	C	154	409	174	50		
	13		1.50	72	C	148	503	133	59		51
12–23	12	M	2.50	71	B	126	346	210	57	d	
	12		2.00	61	B	109	418	166	29		
	13		1.50	59	B	107	405	131	41		
	18	T	2.50	30	B	—32	419	113	51	b	
	18		2.20	30	B	—32	457	104	48		
	19		2.00	29	B	—33	485	99	48		46
12–24	18	T	2.50	12	A	—25	466	86	43	c	
	18		2.20	12	A	—27	498	78	36		
	19		2.00	13	A	—28	526	73	38		39
1951											
1– 1	12	M	2.50	138	C	124	305	201	56	c	
	12		2.21	131	C	124	352	182	61		
	12		2.00	134	C	113	385	162	61		59
1– 3	12	M	2.50	140	C	324	237	336	23	p	
	12		2.20	141	C	314	292	298	36		
	12		2.00	144	C	310	331	273	40		
1– 4	12	M	2.50	114	C	206	293	251	41	d	
	12		2.00	114	C	193	370	204	44		
	13		1.50	109	C	185	471	156	61		49
1– 5	18	T	2.50	41	B	—65	410	102	52	c	
	18		2.20	38	B	—68	448	93	44		
	19		2.00	40	B	—61	475	91	53		50

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1951—Continued											
1- 6	18	T	2.50	16	A	—14	453	96	43	b	
	18		2.20	14	A	—20	496	84	42		
	19		2.00	16	A	—25	520	74	40		42
1- 7	18	T	2.50	12	A	—36	473	75	36	b	
	18		2.20	13	A	—35	508	69	42		
	19		2.00	13	A	—38	531	63	34		37
			Long method						51		
1- 9	17	T	2.50	11	A	—17	458	96	29	d	
	18		2.20	11	A	—16	494	93	30		
	19		2.00	10	A	—19	506	84	31		30
1-10	12	M	2.20	86	C	161	378	195	59	c	
	12		2.00	85	C	168	407	183	57		
	13		1.50	81	C	155	502	138	62		59
1-12	12	M	2.51	57	B	84	376	172	57	c	
	12		2.00	51	B	71	460	136	56		
	13		1.51	51	B	74	539	109	61		58
1-13	12	M	2.50	84	C	163	335	214	56	d	
	12		2.00	83	C	153	414	174	60		
	13		1.50	75	C	133	514	128	70		62
1-14	12	M	2.52	61	B	88	373	175	71	c	
	12		2.21	59	B	82	422	154	66		
	12		2.00	56	B	80	453	142	61		66
1-20	20	T	1.73	68	C	—19	477	88	44	c	
	20		1.73	65	C	—18	484	88	47		
	20		1.72	64	C	—14	483	92	45		45
1-23	17	T	2.50	73	C	—56	398	82	47	b	
	18		2.20	74	C	—63	424	72	43		
	18		2.00	72	C	—57	454	73	46		45
			Long method						45		
1-24	12	M	2.50	77	B	117	347	197	58	d	
	13		2.00	71	B	106	429	159	51		
	13		1.42	68	B	87	537	106	62		
			Long method						87		
	17	T	2.50	50	C	—59	411	76	51	c	
	18		2.20	48	C	—56	447	73	49		
	18		2.00	49	C	—58	476	68	53		53
1-25	12	M	2.49	97	C	201	315	251	68	b	
	12		2.00	92	C	196	401	200	64		
	13		1.50	79	C	167	502	143	68		
	17	T	2.50	25	B	—123	442	73	41	a	
	18		2.20	27	B	—130	478	66	40		
	18		2.00	27	B	—135	501	62	39		40
			Long method						36		
1-30	12	M	2.47	48	B	56	399	143	46	c	
	12		2.19	44	B	52	445	131	52		
	12		2.00	44	B	52	469	122	51		50
2- 1	12	M	2.52	77	C	124	344	187	57	c	
	12		2.29	76	C	123	379	175	50		
	12		2.06	77	C	126	415	161	54		
	18	T	2.20	22	A	—13	482	86	54	d	
	18		2.10	23	A	—13	499	83	59		
	18		2.00	21	A	—15	514	80	57		55
2- 2	12	M	2.51	63	B	132	363	182	71	p	
	12		2.20	61	B	128	410	161	71		
	12		2.00	60	B	126	440	150	70		
	19	T	1.70	23	A	—25	526	63	43	c	
	19		1.67	25	A	—22	549	65	44		
	19		1.64	25	A	—22	550	65	45		44
2- 3	17	T	2.50	84	D	9	381	79	56	c	
	17		2.20	86	D	9	420	72	55		
	18		2.00	81	D	6	446	69	52		54
2- 6	17	T	2.50	97	D	15	370	79	54	c	
	17		2.20	95	D	16	410	76	52		
	18		2.00	102	D	18	440	72	57		54
2- 8	12	M	2.51	142	C	174	268	235	34	d	
	12		2.18	142	C	162	332	206	49		
	12		2.00	145	C	167	362	194	52		45
2- 9	17	T	2.50	75	C	—55	384	83	43	c	
	17		2.20	76	C	—54	422	79	50		
	18		2.00	72	C	—50	449	75	47		47
			Long method						60		
2-10	12	M	2.49	100	C	197	360	218	64	p	
	13		1.99	96	C	191	392	198	60		
	13		1.79	97	C	176	437	175	72		
2-12	12	M	2.50	68	B	74	374	152	52	c	
	12		2.21	59	B	62	422	135	46		
	13		2.00	56	B	60	455	124	55		51
1951—Continued											
2-13	17	T	2.50	9	A	19	448	140	27	d	
	17		2.20	10	A	19	480	129	28		
	18		2.00	11	A	22	508	125	27		27
2-15	17	T	2.20	23	A	119	414	234	51	d	
	17		2.00	22	A	114	447	213	51		
	18		1.80	26	A	104	481	184	60		54
2-19	17	T	2.50	16	A	34	434	154	51	d	
	17		2.20	15	A	42	469	150	49		
	17		2.00	16	A	35	496	136	45		48
2-20	12	M	2.17	93	C	167	378	197	66	d	
	13		2.00	95	C	169	407	186	70		68
2-21	13	M	1.88	66	B	115	450	161	63	c	
	13		1.73	65	B	119	476	154	65		
	13		1.64	65	B	122	494	149	68		65
2-22	12	M	2.20	74	B	129	394	194	64	c	
	13		2.00	76	B	127	427	176	66		
	13		1.60	66	B	118	497	142	64		65
2-23	13	M	1.79	89	C	249	419	210	48	d	
	13		1.68	87	C	236	442	201	51		
	13		1.58	100	C	235	462	186	68		56
3- 1	12	M	2.47	54	B	79	372	166	59	d	
	12		2.20	73	B	84	410	149	61		
	13		2.00	72	B	82	446	136	66		62
3- 6	12	M	2.50	96	C	29	374	127	69	c	
	12		2.20	87	C	24	417	111	63		
	13		1.99	94	C	20	446	103	67		66
3- 7	12	M	2.51	106	C	39	353	136	46	c	
	12		2.20	99	C	38	395	122	49		
	13		2.00	100	C	35	432	113	59		
	17	T	1.80	17	A	66	520	155	64	d	
	17		1.70	15	A	59	536	145	56		
	18		1.60	14	A	58	549	141	50		53
3- 8	12	M	2.50	65	B	40	396	117	57	b	
	13		1.99	64	B	36	465	99	54		
	14		1.50	62	B	33	540	79	54		55
			Long method						49		
3- 9	13	M	2.00	59	B	41	466	106	64	d	
	13		1.68	55	B	40	504	93	45		
	14		1.50	60	B	47	535	88	55		55
3-10	12	M	2.50	75	B	78	365	156	57	b	
	13		1.99	72	B	72	446	127	64		
	14		1.48	71	B	75	523	103	56		
			Long method						59		
	18	T	1.50	17	A	102	540	165	42	d	
	18		1.40	18	A	126	546	173	42		
	19		1.37	19	A	116	551	163	42		53
3-12	17	T	1.80	23	A	14	517	103	46	c	
	17		1.60	23	A	12	547	96	42		
	18		1.50	23	A	10	565	91	48		45
3-13	17	T	1.60	34	B	110	509	133	38	d	
	18		1.50	34	B	101	530	126	43		
	18		1.40	31	B	118	550	127	42		41
3-14	12	M	2.50	79	C	86	363	160	66	d	
	13		2.18	83	C	76	416	140	66		
	13		2.00	77	C	77	437	131	61		
	18	T	1.50	13	A	66	558	143	37	b	
	18		1.45	12	A	68	561	142	34		
	18		1.40	15	A	84	566	147	36		50
3-15	13	M	1.80	71	B	63	480	111	66	c	
	13		1.67	67	B	60	505	104	65		
	14		1.50	58	B	51	538	92	62		64
3-16	13	M	1.96	83	C	83	442	133	70	d	
	13		1.81	82	C	82	464	125	66		
	13		1.70	84	C	82	481	118	68		68
3-17	12	M	2.26	49	B	18	442	96	58	c	
	13		2.03	51	B	18	475	89	60		
	13		1.87	49	B	20	499	87	59		59
3-21	12	M	2.52	54	B	44	412	122	70	c	
	13		1.99	48	B	29	483	99	60		
	14		1.50	43	B	18	564	75	61		64
			Long method						56		
3-22	12	M	2.51	61	B	61	394	142	69	c	
	13		2.00	58	B	47	471	111	67		
	14		1.50	51	B	43	572	89	63		66
			Long method						72		
3-23	12	M	2.50	55	B	64	397	149	68	c	
	13		2.00	56	B	63	465	126	68		
	14		1.50	52	B	65	546	103	63		66
1951—Continued											
3-24	12	M	2.50	63	B	79	391	163	78	d	
	13		2.00	58	B	71	464	133	69		
	14		1.50	52	B	58	546	98	66		71
3-25	12	M	2.51	51	B	48	390	134	45	c	
	13		2.20	45	B	36	449	115	52		
	13		2.01	45	B	37	468	108	45		
	16	T	2.20	16	A	95	421	212	21	p	
	16		2.00	18	A	99	453	200	32		
	17		1.80	18	A	100	476	195	36		47
3-26	12	M	2.50	63	B	58	377	137	46	c	
	13		1.98	60	B	50	451	112	41		
	14		1.50	56	B	46	531	89	42		
	17	T	1.50	38	B	237	496	160	41	b	
	18		1.44	38	B	226	510	154	39		
	18		1.40	34	B	222	522	148	34		40
3-27	12	M	2.52	54	B	53	396	138	57	c	
	13		2.00	49	B	47	470	115	54		
	14		1.50	44	B	40	554	89	58		
			Long method						52		
	17	T	1.70	17	A	208	481	277	68	p	
	17		1.60	17	A	208	501	264	68		
	17		1.50	17	A	208	520	251	69		56
3-28	12	M	2.51	44	A	48	402	138	58	c	
	13		2.00	42	A	42	474	114	50		
	14		1.49	41	A	33	557	86	53		54
3-29	12	M	2.50	42	A	48	403	139	52	d	
	13		1.99	39	A	38	475	112	44		
	14		1.50	40	A	43	548	92	53		50
3-30	13	M	1.75	60	B	76	474	123	42	d	
	13		1.65	58	B	76	491	117	41		
	14		1.57	58	B	78	501	114	39		41
3-31	12	M	2.50	37	A	24	419	119	53	b	
	13		2.00	36	A	19	489	99	54		
	14		1.50	35	A	12	564	77	53		
	19	T	1.19	13	A	12	629	90	38	c	
	19		1.18	12	A	6	632	86	38		
	19		1.17	14	A	11	632	89	39		47
4- 1	12	M	2.50	25	A	0	448	100	56	b	
	13		2.20	22	A	—5	492	91	56		
	13		1.99	24	A	—6	520	85	55		
	16	T	2.50	17	A	29	424	145	42	c	
	16		2.00	19	A	44	482	143	44		
	17		1.50	23	A	77	542	146	56		53
			Long method						35		
4- 2	12	M	2.50	18	A	—4	447	99	33	c	
	13		2.00	15	A	—8	529	86	46		
	14		1.50	14	A	—20	605	65	42		40
4- 3	12	M	2.51	24	A	46	425	146	51	c	
	13		2.00	23	A	37	498	118	42		
	14		1.50	22	A	27	577	89	46		46
4- 4	12	M	2.51	18	A	17	450	121	51	b	
	13		2.01	16	A	11	519	100	52		
	14		1.51	17	A	10	591	80	59		54
4- 5	12	M	2.50	21	A	21	441	123	43	d	
	13		2.01	21	A	17	517	103	57		
	14		1.51	18	A	19	585	79	45		48
4- 6	12	M	2.51	31	A	57	403	152	38	d	
	13		2.00	29	A	49	478	125	35		
	14		1.50	26	A	43	552	97	32		35
4- 7	12	M	2.51	53	B	62	371	148	31	d	
	13		2.01	41	B	41	459	113	29		
	14		1.50	44	B	41	541	90	36		32
4- 8	12	M	2.52	54	B	23	395	105	39	c	
	13		2.00	50	B	18	463	88	35		
	14		1.55	50	B	18	536	74	44		
	16	T	1.80	53	C	71	434	139	24	d	
	17		1.60	55	C	71	469	131	26		
	17		1.50	57	C	62	483	126	24		34
4- 9	12	M	2.52	29	A	3	423	104	35	c	
	13		2.22	29	A	6	461	97	39		
	13		2.00	29	A	3	494	90	43		
	16	T	2.00	51	C	25	426	119	29	d	
	16		1.80	49	C	13	461	105	33		
	17		1.60	44	C	3	499	94	34		31
4-10	12	M	2.51	18	A	—4	456	101	43	b	
	13		2.00	17	A	—3	530	89	41		
	14		1.51	12	A	—18	607	64	42		42

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1951—Continued											
4–11	12	M	2.50	16	A	4	457	109	45	c	
	13		2.01	16	A	−1	523	91	52		
	14		1.51	16	A	−2	587	74	42		46
4–12	13	M	2.52	23	A	18	436	120	46	d	
	13		2.01	22	A	26	501	110	48		47
4–13	16	T	2.20	24	A	56	436	161	44	b	
	16		2.00	24	A	56	466	152	47		
	16		1.80	24	A	54	493	142	44		45
4–17	13	M	2.50	18	A	−8	459	98	43	c	
	13		2.00	18	A	−9	524	84	47		
	14		1.50	19	A	−12	584	68	34		41
4–18	13	M	2.49	17	A	−14	457	92	42	d	
	13		1.99	15	A	−20	525	77	36		
	14		1.50	17	A	−22	588	63	35		38
4–19	13	M	2.50	26	A	5	429	107	34	d	
	13		2.20	28	A	6	467	98	40		
	13		2.00	30	A	5	495	91	43		39
4–20	13	M	2.52	76	B	72	360	147	50	b	
	13		2.01	70	B	74	438	121	55		
	14		1.50	70	B	74	515	97	52		52
4–21	13	M	2.50	67	8	38	383	115	48	c	
	13		2.01	61	8	27	464	91	50		
	14		1.50	47	B	18	511	74	46		48
4–22	13	M	2.51	59	B	37	389	115	44	c	
	13		2.21	58	B	35	430	107	45		
	13		2.01	57	B	35	449	101	34		
	18	T	1.26	41	B	21	542	97	14	p	
	18		1.22	40	B	26	547	97	12		
	18		1.20	40	8	29	551	97	13		
4–23	13	M	2.50	41	A	12	412	105	44	c	
	13		2.00	47	A	13	476	90	40		
	14		1.50	30	A	−8	572	68	48		44
4–24	13	M	2.50	19	A	−7	456	97	39	c	
	13		2.00	18	A	−11	524	83	45		
	14		1.49	19	A	−14	598	67	44		43
			Long method						51		
4–25	13	M	2.50	12	A	−13	471	96	38	c	
	13		2.00	12	A	−15	540	81	45		
	14		1.50	12	A	−20	609	65	41		41
			Long method						46		
4–30	14	M	1.71	51	B	65	471	116	899	p	
	14		1.62	50	8	69	480	114	899		
	14		1.53	49	B	66	501	107	04		
5– 1	13	M	2.51	43	A	50	388	139	29	p	
	13		2.00	39	A	44	460	117	26		
	14		1.50	38	A	34	549	87	36		
5– 2	13	M	2.51	21	A	11	437	114	28	d	
	13		2.01	20	A	7	510	96	36		
	14		1.50	17	A	−1	592	74	39		34
5– 3	13	M	2.51	23	A	−2	444	102	42	d	
	13		2.00	21	A	1	512	91	45		44
5– 4	13	M	2.51	31	A	9	432	108	53	b	
	13		2.00	32	A	7	500	92	53		
	14		1.50	30	A	4	572	74	52		53
5– 6	13	M	2.12	56	8	24	449	93	43	c	
	13		1.98	54	B	21	468	89	39		
	14		1.87	54	8	20	485	84	44		42
5– 7	13	M	2.52	48	B	20	405	105	47	c	
	13		2.00	47	B	22	471	93	42		
	14		1.50	51	B	43	540	89	44		44
5– 8	13	M	2.51	29	A	12	420	108	31	p	
	15		1.50	31	A	32	554	89	35		
5– 9	17	T	1.30	50	C	180	529	154	65	d	
	18		1.20	53	C	178	541	145	58		
	18		1.16	56	C	183	544	144	60		58
5–10	13	M	2.50	49	B	27	401	111	38	p	
	13		2.00	49	B	24	467	94	39		
	15		1.50	45	8	13	545	71	32		
	16	T	1.50	69	C	226	454	192	65	d	
	17		1.30	80	D	156	485	176	56		
	18		1.20	77	D	151	509	162	60		56
5–11	13	M	2.34	54	8	30	416	107	43	c	
	13		2.00	49	B	26	466	96	41		
	15		1.50	47	B	18	546	74	40		41
5–12	13	M	2.51	62	B	60	369	141	37	c	
	13		2.00	60	B	54	439	117	32		
	15		1.50	62	B	53	536	92	44		38
1951—Continued											
5–13	13	M	2.50	55	B	44	381	128	27	c	
	13		2.20	52	B	41	421	116	30		
	13		2.00	54	B	40	450	106	31		
	18	T	1.20	49	C	41	561	101	43	c	
	18		1.16	52	C	36	569	98	47		
	18		1.10	54	C	46	582	93	53		39
5–15	13	M	2.51	46	A	21	389	112	16	d	
	13		1.99	43	A	18	459	95	16		
	15		1.47	36	A	9	551	74	36		23
5–16	13	M	2.51	51	B	37	376	123	16	d	
	14		1.97	49	B	34	454	103	18		
	15		1.50	47	B	34	533	84	29		21
5–18	13	M	2.51	26	A	−17	435	86	23	c	
	14		2.00	25	A	−18	505	75	32		
	15		1.50	23	A	−21	582	62	31		29
			Long method						48		
5–19	13	M	2.50	17	A	−21	452	86	30	c	
	14		2.00	17	A	−21	523	75	39		
	15		1.50	17	A	−26	597	61	39		36
5–20	13	M	2.51	20	A	−20	457	87	41	d	
	13		2.25	20	A	−19	496	81	47		
	14		1.99	17	A	−21	533	75	52		
	15	T	2.00	82	D	133	365	219	62	d	
	16		1.80	79	D	129	404	199	61		
	16		1.50	81	D	138	457	181	66		55
5–21	13	M	2.51	16	A	4	457	110	47	c	
	14		2.01	16	A	−17	527	79	42		
	15		1.50	14	A	−19	598	65	39		43
5–22	13	M	2.51	9	A	−20	487	91	39	c	
	14		2.01	9	A	−22	551	77	41		
	15		1.50	7	A	−28	621	63	39		40
5–23	13	M	2.50	12	A	−13	469	96	30	d	
	13		2.00	13	A	−14	535	82	41		
	15		1.44	11	A	−19	612	65	41		37
5–24	15	T	2.50	86	D	73	338	167	58	c	
	15		2.20	83	D	70	372	152	51		
	15		2.00	85	D	71	401	143	50		53
5–25	13	M	2.50	25	A	15	424	116	32	d	
	14		2.00	23	A	7	497	95	27		
	15		1.50	22	A	6	583	78	45		
	15	T	2.50	92	D	53	338	134	51	c	
	15		2.00	89	D	48	413	114	50		
	16		1.50	96	D	48	485	97	46		44
			Long method						29		
5–26	13	M	2.51	17	A	13	442	117	34	c	
	14		2.00	17	A	9	515	98	39		
	15		1.50	13	A	−3	598	75	41		
			Long method						44		
	16	T	1.50	66	C	−13	513	84	49	c	
	17		1.40	64	C	−15	529	81	41		
	17		1.30	68	C	−18	548	77	45		42
5–29	13	M	2.50	11	A	−3	465	105	39	c	
	14		2.00	10	A	−11	535	86	34		
	15		1.50	10	A	−16	608	69	37		39
5–30	13	M	2.51	9	A	−12	474	98	26	d	
	14		2.01	9	A	−17	541	81	32		
	15		1.50	8	A	−21	625	66	37		32
			Long method						38		
5–31	13	M	2.48	9	A	−12	483	99	33	d	
	14		2.00	8	A	−12	556	86	50		
	15		1.50	7	A	−19	621	68	35		39
6– 1	13	M	2.49	13	A	−3	468	105	40	c	
	14		2.00	14	A	−6	538	88	51		
	15		1.50	11	A	−15	611	69	46		46
6– 2	13	M	2.50	13	A	−8	474	101	40	c	
	14		1.96	11	A	−9	547	85	43		
	15		1.50	10	A	−16	614	69	45		
	15	T	2.50	41	B	240	319	236	23	d	
	15		2.20	39	B	263	361	222	25		
	15		2.00	39	B	274	391	210	24		38
6– 3	13	M	2.50	12	A	−5	464	103	33	d	
	13		2.21	11	A	−5	513	95	49		
	14		2.00	11	A	−6	539	89	50		44
6– 4	13	M	2.50	13	A	9	453	116	33	d	
	14		2.00	13	A	9	524	100	36		
	15		1.50	12	A	0	602	77	43		37
6– 5	13	M	2.51	20	A	6	447	111	49	c	
	14		2.00	19	A	−12	517	81	40		
	15		1.50	21	A	−18	587	64	46		45
1951—Continued											
6– 6	13	M	2.51	6	A	−17	504	94	40	b	
	14		2.00	6	A	−20	572	80	42		
	15		1.50	6	A	−23	638	65	43		42
6– 7	13	M	2.52	9	A	9	479	117	52	b	
	14		2.01	9	A	−21	546	78	42		
	15		1.50	9	A	−21	624	65	51		
	17	T	1.30	34	B	160	541	131	26	d	
	17		1.20	39	B	218	549	135	37		
	18		1.15	26	B	184	567	127	32		44
6– 8	13	M	2.51	6	A	−20	497	92	35	b	
	14		2.00	6	A	−24	563	77	41		
	15		1.50	6	A	−28	627	64	39		38
			Long method						47		
6– 9	13	M	2.51	24	A	6	434	109	36	b	
	13		2.20	23	A	7	470	101	37		
	14		1.99	23	A	6	502	94	36		36
6–10	13	M	2.50	22	A	40	418	141	23	d	
	14		2.00	20	A	38	490	120	31		
	15		1.58	22	A	30	555	96	34		
	17	T	1.40	51	C	473	418	291	52	p	
	17		1.30	52	C	464	444	271	52		
	17		1.20	59	C	430	465	244	52		29
6–11	15	M	1.60	18	A	10	569	84	43	d	
	15		1.55	18	A	5	574	79	41		
	15		1.51	18	A	3	592	73	54		
	17	T	1.40	55	C	413	421	267	39	d	
	17		1.30	57	C	371	445	239	30		
	17		1.20	62	C	390	464	233	40		41
6–13	16	T	1.50	78	D	116	465	162	58	d	
	17		1.40	77	D	119	482	158	60		
	17		1.30	75	D	124	500	153	60		59
6–14	13	M	2.52	67	B	28	376	104	36	d	
	14		2.00	67	B	26	450	88	32		
	15		1.50	61	B	24	531	72	40		
	16	T	1.60	59	C	186	450	183	55	d	
	16		1.50	61	C	188	466	176	61		
	17		1.40	62	C	189	487	168	62		47
6–16	13	M	2.53	19	A	6	432	110	23	d	
	14		2.00	18	A	4	507	94	34		
	15		1.50	20	A	7	579	78	38		
	15	T	2.50	101	D	151	243	279	32	c	
	15		2.20	99	D	150	297	249	40		
	15		2.00	106	D	154	328	232	45		37
6–17	13	M	2.51	18	A	2	439	107	21	d	
	14		2.20	17	A	1	486	97	36		
	14		1.99	17	A	−6	516	86	31		
	15	T	2.00	77	D	93	382	174	35	d	
	16		1.80	78	D	96	414	165	44		
	16		1.50	102	D	128	439	164	45		35
6–18	13	M	2.52	8	A	−23	484	89	30	c	
	14		2.00	8	A	−25	555	76	40		
	15		1.50	8	A	−27	620	63	41		37
6–19	13	M	2.50	22	A	−7	440	97	27	d	
	14		2.21	23	A	−11	477	86	27		
	14		2.00	25	A	−10	504	81	34		29
6–20	13	M	2.49	21	A	−8	449	96	36	c	
	14		2.00	22	A	−11	515	82	44		
	15		1.50	24	A	−14	584	66	45		
	15	T	2.00	63	C	37	429	128	56	c	
	16		1.80	59	C	34	464	120	55		
	16		1.50	57	C	36	512	110	56		49
6–21	13	M	2.49	26	A	1	435	100	29	d	
	14		2.00	24	A	−2	503	88	39		
	15		1.50	22	A	−3	577	72	39		
	15	T	2.50	44	8	107	357	193	58	c	
	15		2.00	47	B	103	431	166	66		
	16		1.50	48	B	106	509	133	59		50
			Long method						43		
6–22	13	M	2.50	14	A	−9	460	97	34	c	
	14		2.00	14	A	−3	524	90	41		
	15		1.50	20	A	−3	583	72	51		42
6–23	15	T	2.20	33	8	73	436	144	64	d	
	15		2.00	32	B	63	470	133	67		
	16		1.80	39	B	98	481	139	65		65
6–24	14	M	2.06	66	B	38	428	101	22	p	
	14		1.94	68	B	39	444	97	26		
	14		1.83	70	B	45	456	97	28		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1951—Continued											
6–24	15	T	2.50	24	A	62	398	181	51	c	
	15		2.00	19	A	40	486	139	53		
	16		1.50	19	A	24	567	106	51		52
			Long method						81		
6–25	13	M	2.52	37	A	14	405	108	33	c	
	14		2.20	39	A	14	441	99	30		
	14		2.00	39	A	14	473	94	35		
	15	T	2.50	20	A	17	438	129	60	c	
	15		2.00	19	A	9	507	107	58		
	16		1.50	18	A	7	577	91	60		46
			Long method						51		
6–26	13	M	2.51	13	A	−8	459	100	23	c	
	14		2.00	13	A	−9	527	86	31		
	15		1.50	15	A	−12	597	70	40		
			Long method						54		
	15	T	2.50	16	A	8	445	123	50	c	
	15		2.00	15	A	6	513	106	52		
	16		1.50	21	A	18	564	99	50		41
			Long method						38		
6–27	13	M	2.51	13	A	−10	461	98	21	d	
	14		2.01	13	A	−8	529	87	31		
	15		1.50	11	A	−10	604	72	34		
			Long method						56		
	15	T	2.50	16	A	−8	457	103	54	d	
	15		2.00	16	A	−9	516	90	47		
	16		1.50	23	A	23	552	102	39		38
			Long method						47		
6–28	15	T	2.20	16	A	1	482	106	43	c	
	15		2.00	16	A	3	512	103	47		45
6–29	15	T	2.50	20	A	−9	447	98	55	c	
	15		2.20	20	A	−10	483	90	55		
	15		2.00	20	A	−11	510	85	55		55
6–30	19	T	1.04	59	C	−25	603	66	49	d	
	19		1.03	61	C	−7	597	75	38		
	19		1.02	61	C	2	598	79	41		43
7– 1	13	M	2.50	44	A	22	405	114	38	c	
	14		2.20	44	A	14	450	98	39		
	14		2.00	45	A	13	475	90	40		
	15	T	2.50	18	A	−14	447	94	41	d	
	15		2.00	19	A	−15	518	82	56		
	16		1.50	20	A	−17	593	69	51		44
			Long method						56		
7– 2	15	T	2.50	33	B	−76	404	95	52	b	
	15		2.00	32	B	−69	490	86	55		
	16		1.50	30	B	−68	560	75	52		53
			Long method						36		
7– 3	13	M	2.50	71	C	−8	384	96	35	d	
	14		2.00	79	C	−4	450	86	45		
	15		1.50	81	C	13	520	78	46		
	15	T	2.50	49	C	−30	403	96	56	b	
	15		2.00	45	C	−29	470	85	52		
	16		1.50	50	C	−23	536	78	54		50
			Long method						57		
7– 4	13	M	2.50	64	B	17	397	93	46	c	
	14		2.00	61	B	13	461	78	39		
	15		1.50	62	B	10	540	64	43		
	15	T	2.50	22	A	−7	442	99	54	b	
	16		2.00	21	A	−9	510	86	53		
	16		1.50	19	A	−14	579	72	48		48
			Long method						44		
7– 5	13	M	2.52	54	B	26	387	109	33	d	
	14		2.20	58	B	26	433	97	38		
	14		2.00	58	B	25	458	91	41		
	18	T	1.10	44	B	−68	606	67	50	b	
	19		1.07	43	B	−63	612	67	50		
	19		1.05	46	B	−63	612	68	59		48
7– 6	15	T	2.50	83	D	43	352	126	52	c	
	15		2.20	82	D	41	394	115	49		
	15		2.00	82	D	40	425	108	53		51
7– 7	13	M	2.52	33	A	15	410	112	32	d	
	14		2.00	32	A	9	488	93	41		
	15		1.50	35	A	1	561	71	43		39
7– 8	13	M	2.50	24	A	−7	438	97	35	c	
	13		2.20	24	A	−7	478	89	36		
	14		2.00	22	A	−8	510	84	41		
	15	T	2.50	105	D	33	351	100	47	c	
	15		2.20	107	D	36	384	97	47		
	15		2.00	116	D	41	409	93	50		38
1951—Continued											
7– 9	13	M	2.50	16	A	−14	465	93	44	b	
	14		2.00	15	A	−19	534	78	47		
	15		1.50	12	A	−26	616	62	50		
	15	T	2.50	100	D	39	342	112	47	b	
	15		2.20	99	D	39	385	103	45		
	13		2.00	101	D	38	412	97	44		46
7–10	13	M	2.50	11	A	−18	482	92	48	b	
	14		2.00	8	A	−22	560	78	49		
	15		1.50	7	A	−33	633	60	52		
	15	T	2.50	49	C	−12	390	109	54	c	
	15		2.20	48	C	−15	434	100	53		
	16		1.80	50	C	−8	487	94	58		52
7–11	13	M	2.52	7	A	−20	503	92	55	c	
	13		2.34	7	A	−22	525	88	54		
	14		2.22	8	A	−19	537	85	54		
	15	T	2.50	9	A	−3	473	116	55	c	
	15		2.20	11	A	9	499	118	57		
	15		2.00	11	A	11	423	114	51		54
7–12	13	M	2.51	10	A	1	477	110	48	b	
	13		2.28	10	A	−3	508	103	48		
	14		2.16	9	A	−1	526	99	47		
	16	T	1.80	13	A	48	534	143	60	c	
	16		1.60	14	A	43	560	129	54		
	16		1.50	15	A	38	577	119	55		50
7–13	15	T	2.50	9	A	−7	469	111	49	c	
	15		2.20	10	A	−9	509	99	55		
	15		2.00	11	A	−10	532	92	54		53
7–14	13	M	2.50	17	A	21	445	124	36	c	
	14		2.00	15	A	11	519	101	50		
	15		1.50	15	A	14	596	83	54		47
7–15	13	M	2.52	13	A	13	455	120	40	d	
	14		1.99	12	A	7	528	98	40		
	15		1.50	11	A	−5	608	74	48		43
7–16	13	M	2.51	8	A	−5	481	105	41	d	
	14		2.00	9	A	−7	542	89	41		
	15		1.47	8	A	−19	629	67	43		42
7–17	13	M	2.50	12	A	7	465	113	38	d	
	14		1.99	12	A	−4	538	90	48		
	15		1.50	11	A	−16	614	68	49		45
7–21	13	M	2.50	8	A	−17	498	94	48	b	
	14		2.00	7	A	−19	563	81	56		
	16		1.50	6	A	−30	636	62	53		
	18	T	1.10	140	D	115	504	120	44	d	
	19		1.07	146	D	129	506	124	43		
	19		1.05	161	D	151	501	129	44		50
7–22	13	M	2.50	10	A	−3	482	106	47	c	
	14		1.99	9	A	−3	551	92	54		
	15		1.50	6	A	−10	625	72	45		
	16	T	1.80	58	C	−8	468	95	40	c	
	16		1.60	60	C	−6	492	91	32		
	16		1.50	62	C	−16	516	83	38		43
7–23	13	M	2.49	5	A	9	504	124	48	b	
	14		2.00	5	A	2	570	102	53		
	15		1.50	6	A	−10	644	76	53		51
7–24	13	M	2.50	14	A	91	422	192	30	d	
	14		1.99	16	A	93	490	163	32		
	15		1.50	14	A	88	570	126	42		35
			Long method						34		
7–27	13	M	2.50	18	A	113	411	212	34	d	
	14		1.99	16	A	102	488	170	33		
	15		1.50	15	A	88	578	126	52		40
7–29	13	M	2.48	20	A	34	443	136	45	c	
	14		1.99	19	A	29	515	113	49		
	15		1.50	16	A	23	595	87	54		
	15	T	2.50	88	D	33	352	111	45	c	
	15		2.20	86	D	32	394	102	47		
	16		2.00	92	D	37	423	100	54		49
7–30	13	M	2.53	11	A	7	471	116	50	c	
	14		2.00	10	A	−2	544	93	47		
	15		1.49	9	A	−21	630	65	51		
			Long method						56		
	15	T	2.50	88	D	30	357	107	49	d	
	15		2.20	89	D	34	398	102	52		
	16		2.00	90	D	35	423	99	44		43
7–31	13	M	2.49	20	A	2	473	106	44	c	
	14		2.00	19	A	−3	522	88	47		
	15		1.50	25	A	2	579	74	46		
			Long method						43		
1951—Continued											
7–31	16	T	2.00	181	D	142	316	181	55	p	
	16		1.80	192	D	152	347	173	65		
	16		1.60	190	D	153	380	162	54		46
8– 1	13	M	2.51	56	B	41	384	118	40	d	
	14		1.99	63	B	44	452	100	41		40
8– 2	13	M	2.50	20	A	11	455	115	53	c	
	14		1.99	19	A	−11	522	82	41		
	15		1.50	14	A	−19	604	65	48		47
8– 3	13	M	2.50	16	A	0	457	103	47	b	
	14		2.01	16	A	−9	525	85	45		
	15		1.50	16	A	−13	599	69	46		46
8– 4	13	M	2.51	26	A	−10	445	92	52	b	
	14		2.00	26	A	−17	517	75	53		
	15		1.50	21	A	−21	591	63	50		
	15	T	2.50	69	C	−23	371	104	44	c	
	15		2.20	68	C	−18	410	101	41		
	16		1.70	62	C	8	476	101	42		47
8– 5	13	M	2.50	24	A	−15	452	90	43	b	
	13		2.19	23	A	−17	492	81	47		
	14		1.99	22	A	−18	521	76	47		
	18	T	1.20	131	D	34	539	61	45	c	
	18		1.15	125	D	31	549	59	42		
	18		1.13	120	D	33	550	62	41		45
8– 6	13	M	2.50	18	A	−4	459	102	49	b	
	14		2.00	19	A	−7	527	85	55		
	15		1.50	18	A	−12	600	69	54		
	15	T	2.50	52	C	−43	400	88	49	b	
	15		2.20	56	C	−44	432	82	49		
	16		2.00	61	C	−46	458	78	48		51
8– 7	15	T	2.50	45	B	−117	412	81	46	b	
	16		2.00	44	B	−124	480	70	52		
	17		1.50	35	B	−130	564	58	51		50
			Long method						46		
8– 8	13	M	2.47	24	A	44	426	143	42	d	
	13		2.01	26	A	40	495	119	51		
	15		1.50	20	A	15	587	83	52		
	15	T	2.50	7	A	−30	489	84	44	b	
	16		2.00	10	A	−22	533	81	41		
	16		1.50	13	A	−17	590	73	39		43
			Long method						38		
8– 9	15	T	2.50	27	B	52	392	144	31	d	
	15		2.20	28	B	62	429	139	30		
	16		2.00	27	B	72	454	136	26		29
8–10	13	M	2.50	10	A	−23	493	89	51	b	
	13		2.00	10	A	−26	555	74	48		
	15		1.50	8	A	−32	629	60	51		42
8–11	13	M	2.50	9	A	−21	496	90	46	b	
	13		2.00	8	A	−25	565	76	55		
	15		1.50	8	A	−30	632	62	53		
			Long method						55		
	15	T	2.50	21	A	15	413	126	27	d	
	15		2.20	19	A	5	466	108	37		
	16		2.00	18	A	0	501	97	41		47
8–12	13	M	2.50	8	A	−25	505	87	58	b	
	13		1.99	8	A	−26	567	75	56		
	15		1.50	7	A	−32	633	61	52		
	15	T	2.50	47	C	−40	398	89	43	b	
	15		2.20	48	C	−41	438	83	47		
	16		2.00	50	C	−44	467	77	51		51
8–13	13	M	2.50	16	A	47	445	150	49	c	
	13		2.00	16	A	46	515	127	55		
	15		1.50	16	A	59	584	108	58		54
			Long method						41		
8–17	16	T	1.70	177	D	120	378	143	47	d	
	16		1.60	180	D	135	378	150	31		
	17		1.50	184	D	153	392	157	39		39
8–19	16	T	2.20	101	D	22	396	82	44	c	
	16		2.00	103	D	23	426	78	48		
	16		1.80	102	D	31	448	83	44		45
8–21	15	T	2.50	43	B	−75	405	98	53	c	
	16		2.20	42	B	−84	454	87	56		
	16		2.00	37	B	−67	480	88	50		53
8–24	15	T	2.50	28	B	−50	425	105	56	d	
	16		2.20	27	B	−51	460	97	49		
	16		2.00	28	B	−42	488	95	55		53
8–25	15	T	2.50	21	A	−8	440	98	52	d	
	16		2.20	24	A	2	465	101	48		
	16		2.00	26	A	7	491	99	54		51

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1951—Continued										
8–26	17	T	1.60	54	C −27	524	74	49	d	
	17		1.50	51	C −33	536	73	50		
	17		1.40	43	C −79	558	71	53		51
8–27	13	M	2.48	4	A −26	531	88	46	c	
	13		2.00	4	A −26	593	77	52		
	14		1.50	4	A −31	659	62	60		53
8–28	13	M	2.50	4	A −30	528	85	51	b	
	13		2.00	4	A −31	592	73	57		
	14		1.50	4	A −31	656	62	58		55
8–30	17	T	1.50	42	B −78	549	74	56	d	
	17		1.40	44	B −90	563	69	58		
	18		1.30	44	B −96	582	65	56		57
8–31	16	T	1.70	53	C −38	511	75	56	c	
	17		1.60	54	C −40	526	72	55		
	17		1.50	54	C −42	542	69	58		56
9– 1	17	T	1.50	26	A −24	576	59	51	d	
	17		1.40	26	A −27	594	56	49		
	18		1.30	24	A −27	609	54	44		48
9– 2	15	T	2.50	23	A −15	446	89	59	c	
	16		2.20	22	A −13	485	86	59		
	16		2.00	22	A −12	510	83	58		59
9– 3	15	T	2.50	17	A −4	450	107	55	c	
	16		2.20	17	A −5	490	98	54		
	16		2.00	17	A −5	514	93	52		54
9– 4	12	M	2.51	58	B 158	341	252	53	c	
	13		2.01	54	B 157	418	213	50		
	14		1.50	53	B 140	513	155	50		
	17	T	1.50	11	A −20	600	72	47	b	
	18		1.30	12	A −14	632	72	47		
	18		1.26	11	A −13	636	71	44		48
9– 5	13	M	2.19	16	A 39	493	131	55	c	
	13		2.00	14	A 43	518	125	63		
	14		1.50	10	A 58	597	109	58		
	17	T	1.60	15	A −28	574	64	41	c	
	17		1.50	15	A −29	594	61	48		
	17		1.40	15	A −29	611	59	49		52
9– 6	12	M	2.49	13	A 12	470	118	58	b	
	13		2.21	12	A 6	510	104	53		
	13		1.99	12	A 2	541	94	57		
	17	T	1.37	33	B 44	563	106	52	d	
	18		1.30	33	B 16	573	95	41		
	18		1.25	34	B 31	574	97	35		53
9– 7	12	M	2.50	13	A −10	479	98	58	b	
	13		1.99	12	A −23	548	75	52		
	14		1.50	9	A −25	624	64	54		55
9– 8	12	M	2.50	23	A 62	420	162	46	d	
	13		2.00	22	A 53	500	131	55		
	14		1.50	18	A 44	584	100	52		51
9–12	13	M	2.20	20	A 19	482	112	43	d	
	13		2.00	21	A 15	505	111	43		
	14		1.50	21	A 14	587	82	48		45
9–13	12	M	2.50	38	A 12	411	106	39	d	
	13		2.00	37	A 8	488	90	51		
	14		1.50	36	A 1	566	71	50		47
9–14	12	M	2.51	30	A 29	419	127	45	d	
	13		2.00	30	A 22	491	104	50		
	14		1.50	35	A 25	561	84	51		49
9–15	12	M	2.50	33	A 11	425	107	44	c	
	13		2.00	32	A 10	496	94	56		
	14		1.50	31	A 8	570	76	52		51
9–16	12	M	2.51	41	A 20	408	112	47	c	
	12		2.20	43	A 18	449	101	52		
	13		1.99	44	A 17	479	94	48		49
9–18	12	M	2.22	34	A 41	440	125	31	d	
	13		2.00	32	A 37	477	115	37		
	13		1.84	31	A 38	501	108	39		36
9–20	12	M	2.51	18	A 28	436	134	27	d	
	12		2.21	17	A 29	484	121	45		
	13		2.00	17	A 25	515	110	47		
	17	T	1.60	84	D 47	469	104	33	d	
	17		1.50	88	D 51	478	103	30		
	18		1.40	89	D 51	496	102	28		35
9–21	12	M	2.50	16	A 7	458	112	55	c	
	13		1.97	16	A 3	549	94	60		
	13		1.50	15	A −1	597	76	46		49
9–22	16	T	2.20	37	B −75	451	89	48	c	
	16		2.00	36	B −81	477	84	39		
	17		1.80	37	B −83	506	78	45		44
1951—Continued										
9–23	16	T	2.50	53	C −34	384	94	40	c	
	16		2.20	53	C −29	431	89	48		
	16		2.00	50	C −34	459	83	47		45
9–24	16	T	2.46	38	B −96	420	87	40	c	
	16		2.00	42	B −81	471	84	46		
	17		1.50	55	C 7	512	95	40		42
			Long method					41		
9–25	16	T	2.50	38	B −99	422	86	49	c	
	16		2.00	40	B −103	478	76	38		
	17		1.50	45	B −137	544	66	40		42
9–26	16	T	2.50	50	C −41	401	89	43	b	
	16		2.00	51	C −43	465	78	48		
	17		1.50	44	C −45	543	64	44		45
			Long method					39		
9–27	12	M	2.50	16	A 20	453	125	36	d	
	13		1.99	14	A 10	524	100	43		
	13		1.50	12	A 7	601	79	48		42
			Long method					76		
9–28	12	M	2.50	9	A −4	486	105	49	c	
	12		1.99	9	A −8	550	88	49		
	13		1.50	7	A −16	629	77	46		48
9–29	12	M	2.46	5	A −16	519	95	58	a	
	12		2.00	5	A −16	573	84	56		
	13		1.48	5	A −16	640	70	55		
	16	T	2.50	62	C −35	386	95	41	c	
	16		2.20	56	C −36	423	87	44		
	16		2.00	59	C −38	458	82	48		53
9–30	17	T	1.60	91	D 14	493	66	40	d	
	17		1.50	90	D 13	509	63	44		
	18		1.40	91	D 11	529	59	42		42
10– 1	17	T	1.60	116	D 37	467	79	35	d	
	17		1.50	126	D 42	481	77	43		
	18		1.40	127	D 42	504	74	50		43
10– 2	16	T	2.50	54	C −45	402	93	42	d	
	16		2.20	51	C −48	439	85	35		
	16		2.00	61	C −45	464	79	50		42
10– 3	16	T	2.50	43	B 15	394	134	63	d	
	16		2.20	40	B 20	438	126	59		
	16		2.00	43	B 26	461	123	55		59
10– 4	16	T	2.50	19	A 8	437	121	50	c	
	16		2.20	18	A 5	481	108	50		
	16		2.00	17	A 1	501	100	46		49
10– 5	12	M	2.46	61	B 117	347	203	30	d	
	12		2.21	63	B 114	383	183	36		
	12		2.00	59	B 111	415	169	36		
	16	T	2.50	35	B 35	399	140	59	d	
	16		2.20	34	B 3	444	118	54		
	16		2.00	34	B 12	467	115	49		44
10– 6	12	M	2.48	27	A 63	409	161	35	d	
	12		1.99	25	A 55	482	131	39		
	13		1.50	23	A 50	567	100	44		39
10– 7	16	T	2.50	33	B −79	413	93	39	c	
	16		2.20	35	B −83	459	86	47		
	16		2.00	34	B −84	482	81	40		42
10– 8	16	T	2.50	54	C 0	383	118	50	c	
	16		2.20	55	C 3	422	108	52		
	17		2.00	59	C −6	442	109	41		48
10– 9	12	M	2.50	29	A 33	417	132	40	d	
	12		2.00	28	A 31	493	111	47		
	13		1.50	24	A 15	575	82	45		44
10–10	12	M	2.50	9	A −4	487	102	49	c	
	12		2.00	8	A −10	552	87	48		
	13		1.50	10	A −16	624	69	52		50
10–11	17	T	1.90	39	B −90	495	78	52	c	
	17		1.80	37	B −92	512	75	53		
	17		1.70	39	B −93	520	73	44		50
10–12	12	M	2.50	36	A 11	422	107	50	c	
	12		2.01	36	A 14	486	95	54		
	13		1.50	41	A 21	566	79	65		
	16	T	2.50	8	A −15	484	111	51	c	
	16		2.20	9	A −15	511	103	44		
	17		2.00	10	A −15	536	98	42		51
10–13	12	M	2.49	38	A 22	402	116	36	d	
	12		2.00	44	A 27	474	102	47		
	13		1.50	43	A 26	555	82	49		
	16	T	2.50	25	A −7	432	97	52	b	
	16		2.20	25	A −8	475	90	51		
	17		2.00	26	A −8	498	84	49		49
1951—Continued										
10–14	12	M	2.51	29	A 38	421	137	52	c	
	12		2.00	30	A 32	492	112	47		
	13		1.50	28	A 29	575	88	62		54
			Long method					48		
10–15	12	M	2.48	28	A 49	412	146	33	d	
	12		1.88	26	A 42	507	116	45		
	13		1.50	22	A 40	566	97	46		
	18	T	1.50	35	B −94	555	68	48	c	
	18		1.44	35	B −105	562	63	45		
	19		1.40	36	B −101	570	64	47		45
10–18	17	T	1.80	68	C −19	465	90	44	b	
	17		1.70	68	C −21	480	86	41		
	18		1.60	68	C −17	495	85	41		42
10–28	12	M	2.51	21	A 41	424	141	29	d	
	12		2.00	18	A 36	500	119	36		
	13		1.50	16	A 39	578	98	48		38
10–29	16	T	2.50	36	B −87	418	91	46	b	
	17		2.20	40	B −89	451	85	47		
	17		2.00	44	B −88	471	83	48		47
10–31	16	T	2.50	29	B −66	430	99	51	c	
	17		2.20	27	B −68	470	91	50		
	17		1.90	31	B −70	504	84	48		50
11– 1	16	T	2.50	52	C −37	400	93	46	b	
	17		2.20	54	C −35	438	87	49		
	17		2.00	54	C −37	462	82	46		47
11– 2	16	T	2.50	49	C −25	397	99	45	c	
	17		2.20	44	B −39	444	88	59		
	17		2.00	45	B −40	472	83	60		55
11– 3	16	T	2.50	33	B −93	423	88	41	c	
	17		2.20	36	B −82	451	87	36		
	17		2.00	35	B −75	481	84	42		40
11– 4	16	T	2.50	53	C −48	402	84	44	b	
	17		2.20	52	C −49	441	78	45		
	17		2.00	53	C −49	468	74	49		46
11– 6	12	M	2.49	35	A 62	384	156	30	d	
	12		2.00	36	A 65	456	134	42		
	13		1.49	34	A 66	541	106	56		43
11– 7	12	M	2.49	30	A 42	414	139	39	d	
	12		1.98	27	A 45	487	120	36		
	13		1.50	26	A 42	561	96	36		37
11– 9	17	T	2.20	18	A −6	481	96	46	b	
	17		2.00	18	A −5	506	92	45		
	18		1.80	21	A −4	530	86	45		45
11–12	12	M	2.50	59	B 67	368	151	37	d	
	12		1.98	56	B 65	445	127	38		
	13		1.50	49	B 60	528	101	34		36
11–13	12	M	2.49	32	A 48	403	144	31	d	
	12		2.00	30	A 50	475	125	38		
	13		1.50	27	A 53	558	102	40		36
11–15	11	M	2.51	19	A 22	434	125	32	d	
	12		2.00	18	A 19	507	106	34		
	13		1.50	16	A 15	585	84	38		35
			Long method					41		
11–18	17	T	2.50	31	B −87	431	90	49	d	
	17		2.20	33	B −85	468	85	46		
	18		2.00	32	B −80	491	82	48		48
11–20	11	M	2.49	60	B 140	340	231	35	d	
	12		2.00	57	B 134	417	190	36		
	13		1.50	56	B 142	500	156	38		36
11–21	11	M	2.51	52	B 172	325	270	31	d	
	12		1.99	48	B 165	410	221	28		
	13		1.50	47	B 163	500	175	26		28
11–22	12	M	1.72	60	B 200	445	220	36	d	
	13		1.63	57	B 201	457	212	32		
	13		1.56	61	B 202	467	204	32		33
11–27	17	T	2.50	68	C −16	382	110	58	c	
	18		2.20	70	C −17	422	101	60		
	18		2.00	62	C −9	448	100	52		57
11–28	17	T	2.50	33	B −68	423	100	45	b	
	18		2.20	31	B −61	464	94	43		
	18		2.00	29	B −58	487	90	42		43
11–29	11	M	2.50	15	A 28	447	133	40	d	
	12		2.00	13	A 26	519	113	47		
	13		1.50	13	A 22	599	88	52		
	17	T	2.50	23	A 13	428	123	48	c	
	18		2.20	25	A 15	466	115	58		
	19		2.00	26	A 13	489	106	49		50

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1951—Continued											
12– 2	11	M	2.49	31	A	17	426	115	41	d	
	12		1.98	28	A	15	498	97	45		
	13		1.50	26	A	16	569	80	46		44
12– 3	11	M	2.51	34	A	26	412	122	40	d	
	12		2.00	35	A	27	485	106	51		
	13		1.50	34	A	28	560	85	47		46
12– 4	11	M	2.51	30	A	40	425	137	61	c	
	12		1.99	28	A	33	496	113	52		
	13		1.50	26	A	29	575	88	54		56
12– 7	11	M	2.52	41	A	61	392	151	51	d	
	12		2.00	38	A	51	475	122	51		
	13		1.50	34	A	39	559	92	52		51
12– 9	18	T	2.20	10	A	—11	497	104	40	b	
	18		2.00	10	A	—12	526	96	42		
	19		1.90	11	A	—8	536	94	39		40
12–10	17	T	2.50	28	B	—50	420	104	44	c	
	18		2.20	29	B	—40	458	94	39		
	18		2.00	28	B	—62	489	88	38		40
12–14	17	T	2.50	12	A	—20	467	92	44	b	
	18		2.20	13	A	—19	501	86	41		
	19		2.00	14	A	—17	522	83	39		41
12–15	17	T	2.50	20	A	—12	445	95	49	b	
	18		2.20	18	A	—11	486	91	46		
	19		2.00	18	A	—10	514	87	51		49
12–16	12	M	2.49	44	A	86	384	173	40	d	
	12		2.01	43	A	63	461	129	43		
	13		1.50	38	A	43	552	93	46		43
12–17	12	M	2.50	33	A	68	402	162	45	d	
	12		2.00	32	A	66	476	137	49		
	13		1.50	32	A	68	554	109	50		
	18	T	2.20	27	B	—37	458	102	42	b	
	18		2.10	27	B	—51	475	95	44		
	19		2.00	26	B	—36	488	97	46		45
12–18	12	M	2.50	31	A	123	397	181	49	d	
	12		2.00	31	A	93	468	158	36		
	13		1.50	26	A	83	554	120	46		44
			Long method						43		
12–20	18	T	2.20	36	B	—54	456	98	50	c	
	18		2.10	37	B	—55	472	95	54		
	19		2.00	39	B	—53	478	93	52		52
12–21	12	M	2.50	21	A	50	423	150	37	d	
	12		1.99	21	A	46	494	125	33		
			Long method						55		
	17	T	2.50	31	B	—89	432	89	50	b	
	18		2.20	33	B	—93	465	82	46		
	19		2.00	36	8	—96	490	78	49		45
12–22	12	M	2.51	21	A	31	434	133	41	c	
	12		1.96	20	A	29	507	111	41		
	13		1.50	19	A	29	580	90	46		
	18	T	2.50	43	B	—103	404	86	42	b	
	18		2.20	35	B	—97	454	81	42		
	19		2.00	36	B	—98	492	77	51		44
12–26	12	M	2.51	48	B	54	386	141	39	c	
	12		1.96	44	A	48	470	116	47		
	13		1.50	43	A	48	546	94	50		45
12–27	12	M	2.50	36	A	49	404	143	46	c	
	12		2.22	35	A	45	443	130	43		
	12		2.00	35	A	41	477	117	44		44
12–29	12	M	2.51	36	A	46	404	140	44	c	
	12		2.00	34	A	44	479	119	47		
	13		1.50	33	A	40	556	93	47		46
12–31	12	M	2.48	23	A	24	438	125	42	d	
	12		2.00	22	A	26	503	110	46		44
1952											
1– 1	18	T	2.50	24	A	21	415	131	42	c	
	18		2.00	24	A	22	454	123	44		43
1– 2	18	T	2.50	8	A	8	456	129	44	b	
	18		2.20	9	A	8	494	121	51		
	19		2.00	8	A	8	517	114	41		45
1– 3	18	T	2.50	10	A	5	461	124	41	b	
	18		2.20	9	A	3	500	114	38		
	19		2.00	10	A	3	532	107	45		41
1– 4	12	M	2.52	133	C	304	240	313	18	p	
	12		2.00	134	C	300	329	266	24		
	13		1.50	132	C	308	426	214	34		
	18	T	2.50	19	A	18	431	131	46	b	
	18		2.20	18	A	16	472	124	46		
	18		2.10	20	A	16	478	121	43		45
1952—Continued											
1– 5	18	T	2.50	4	A	47	473	180	47	c	
	18		2.20	5	A	52	496	170	27		
	19		2.00	6	A	56	519	165	26		33
1– 7	12	M	2.51	120	C	185	278	239	24	d	
	12		2.00	123	C	182	360	199	27		
	13		1.50	126	C	187	447	160	30		27
1– 9	17	T	2.50	31	B	—11	414	122	51	c	
	18		2.20	31	B	—14	455	111	54		
	19		2.00	32	B	—13	478	106	50		52
1–19	17	T	2.50	18	A	—8	456	101	56	c	
	18		2.20	20	A	—6	485	95	48		
	18		2.00	22	A	—4	509	91	53		52
1–20	19	T	1.90	23	A	13	507	105	51	c	
	19		1.85	13	A	4	533	102	45		
	19		1.80	17	A	7	534	100	53		50
1–26	17	T	2.50	34	B	—36	415	111	54	c	
	18		2.20	44	B	—34	439	107	58		
	19		2.00	41	B	—26	468	104	55		56
1–28	17	T	2.50	19	A	—6	449	103	48	b	
	18		2.20	17	A	—6	492	97	49		
	18		2.00	16	A	—6	519	93	49		49
2– 2	17	T	2.50	16	A	8	434	123	30	d	
	18		2.20	17	A	13	468	118	34		
	18		2.00	20	A	12	499	109	47		37
2– 3	17	T	2.50	42	B	—67	401	101	40	c	
	17		2.20	41	B	—65	440	95	38		
	18		2.00	43	B	—69	462	89	49		42
2– 5	12	M	2.49	90	C	128	321	192	39	b	
	13		2.00	86	C	131	400	163	36		
	13		1.50	82	C	118	493	122	40		38
2– 6	12	M	2.45	124	C	297	258	310	27	d	
	13		1.99	126	C	283	340	254	37		
	13		1.50	127	C	284	436	203	37		34
2– 9	12	M	2.49	104	C	241	282	270	40	d	
	13		2.01	102	C	214	369	214	35		
	13		1.50	97	C	243	461	180	38		38
2–10	18	T	2.00	38	B	114	435	153	36	c	
	18		1.90	39	B	115	446	149	32		
	18		1.80	39	B	115	465	144	36		35
2–11	17	T	2.50	24	A	45	404	160	50	c	
	17		2.20	23	A	42	446	145	42		
	18		2.00	18	A	34	487	132	41		44
2–12	18	T	1.90	23	A	5	506	96	44	b	
	18		1.80	23	A	2	521	91	47		
	18		1.70	25	A	4	529	89	42		44
2–13	18	T	1.67	41	B	55	486	122	30	d	
	19		1.60	38	B	38	508	113	35		
	19		1.57	39	B	33	514	110	34		33
2–14	17	T	2.20	21	A	107	417	222	43	d	
	17		2.00	23	A	96	448	193	44		
	18		1.80	26	A	61	483	146	34		40
2–15	12	M	2.50	107	C	152	307	214	41	d	
	12		2.20	110	C	148	354	193	40		
	13		1.53	105	C	159	462	147	37		39
2–16	17	T	2.50	68	C	35	341	146	30	d	
	17		2.20	68	C	30	387	131	37		
	17		2.00	70	C	19	422	118	43		37
2–18	12	M	2.20	78	C	123	384	170	45	d	
	13		2.00	79	C	131	414	161	48		
	13		1.50	77	C	143	492	133	39		44
2–19	12	M	2.50	92	C	171	311	222	31	d	
	12		2.21	89	C	150	364	189	38		
	13		2.05	86	C	160	387	179	32		
	17	T	2.50	15	A	119	387	265	46	c	
	17		2.20	14	A	128	430	252	48		
	17		2.00	13	A	138	458	244	48		44
2–21	17	T	2.50	13	A	180	366	346	48	d	
	17		2.20	14	A	164	418	292	54		
	17		2.00	15	A	136	458	240	58		53
2–24	12	M	2.49	106	C	131	319	200	43	c	
	13		2.00	102	C	131	395	167	50		
	13		1.50	103	C	121	483	127	46		46
			Long method						50		
2–25	12	M	2.50	72	B	100	347	180	42	c	
	13		1.99	67	B	90	431	145	44		
	14		1.48	63	B	81	518	108	43		43
2–26	12	M	2.51	83	C	150	328	205	43	c	
	13		2.00	78	C	127	417	159	47		
	13		1.50	71	B	96	509	118	49		46
1952—Continued											
2–27	12	M	2.51	94	C	94	335	170	43	d	
	13		2.00	87	C	73	418	131	37		40
2–28	12	M	2.49	113	C	109	315	186	36	d	
	13		1.98	114	C	105	388	154	34		
	13		1.54	131	C	144	445	144	35		
	17	T	2.00	37	B	5	451	140	35	c	
	17		1.90	37	B	12	468	131	38		
	17		1.80	36	B	25	483	123	42		37
3– 1	12	M	2.50	108	C	131	313	200	37	b	
	13		1.99	98	C	129	396	163	39		
	14		1.50	89	C	118	489	123	43		38
3– 2	12	M	2.48	149	C	235	249	275	11	d	
	13		1.99	145	C	230	335	228	29		
	14		1.50	149	C	201	435	169	39		26
3– 3	12	M	2.49	116	C	121	303	194	21	d	
	13		1.98	114	C	116	392	160	41		
	14		1.50	103	C	117	475	127	36		33
3– 4	12	M	2.48	117	C	131	271	201	25	d	
	12		2.21	120	C	133	343	186	32		
	13		1.99	111	C	131	382	168	30		29
3– 5	12	M	2.33	104	C	147	332	199	30	d	
	13		1.99	101	C	144	388	173	38		
	14		1.50	96	C	132	469	131	29		
	17	T	2.20	18	A	75	446	186	48	b	
	17		2.00	17	A	65	480	166	46		
	17		1.80	16	A	61	515	152	50		42
3– 6	12	M	2.50	96	C	112	325	183	39	d	
	13		2.00	96	C	109	396	153	24		
	14		1.50	97	C	104	491	121	48		37
3– 7	12	M	2.49	110	C	137	303	203	31	d	
	13		1.99	116	C	132	383	169	36		
	14		1.50	109	C	134	472	134	40		36
3– 8	12	M	2.50	104	C	176	296	228	21	d	
	13		2.01	98	C	172	373	189	27		
	14		1.47	91	C	158	482	139	44		31
3– 9	12	M	2.40	83	C	114	347	176	33	d	
	12		2.20	81	C	115	376	165	32		
	13		2.03	81	C	110	404	152	37		30
3–12	17	T	2.50	18	A	48	403	168	58	d	
	18		1.50	29	B	29	550	105	54		56
3–13	13	M	2.19	54	B	70	423	144	32	d	
	13		2.00	49	B	67	453	133	43		38
3–18	12	M	2.50	127	C	213	268	258	23	d	
	13		2.20	127	C	208	317	231	21		
	13		2.00	126	C	198	357	208	33		26
3–20	16	T	2.00	11	A	157	454	264	41	c	
	17		1.80	11	A	163	485	248	45		
	17		1.70	11	A	137	511	215	43		43
3–21	12	M	2.50	122	C	162	288	222	24	d	
	13		2.00	114	C	155	368	183	24		
	14		1.50	106	C	144	468	138	30		26
3–22	16	T	2.50	9	A	58	428	188	28	d	
	16		2.20	10	A	48	472	162	33		
	16		2.00	8	A	44	506	151	30		30
3–25	16	T	2.50	39	B	173	350	202	40	c	
	16		2.20	38	B	175	392	186	35		
	16		2.00	35	B	161	430	169	38		38
3–27	12	M	2.50	119	C	173	277	230	08	p	
	13		2.00	114	C	168	364	190	20		
	14		1.50	120	C	181	449	156	28		
			Long method						39		
3–31	13	M	2.20	10	A	—16	523	87	40	c	
	13		2.00	7	A	—20	557	80	45		
	13		1.80	7	A	—20	590	75	52		46
4– 1	13	M	2.20	12	A	—8	512	94	42	b	
	13		2.00	13	A	—5	534	89	42		
	13		1.80	13	A	—7	564	82	43		42
4– 2	12	M	2.50	36	A	39	413	133	46	c	
	13		2.20	36	A	36	455	120	47		
	13		2.00	34	A	33	485	110	44		46
4– 3	12	M	2.50	51	B	106	362	199	34	d	
	13		2.20	63	B	109	401	178	38		
	13		2.00	58	B	84	439	161	41		38
4– 4	12	M	2.50	22	A	32	438	134	44	c	
	13		2.20	24	A	36	471	126	49		
	13		2.00	24	A	33	500	115	45		46
4– 5	12	M	2.50	50	B	34	397	119	39	c	
	13		2.20	51	B	36	432	110	31		
	13		2.00	51	B	36	464	103	43		

Table 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1952—Continued											
4- 5	16	T	2.50	32	8	124	372	178	41	d	
	16		2.20	34	B	115	410	161	35		38
4- 6	13	M	2.00	19	A	0	522	91	53	b	
	13		1.80	19	A	−3	548	83	47		
	14		1.50	17	A	−1	594	73	49		50
4- 7	12	M	2.50	46	B	46	392	134	35	b	
	13		2.20	46	B	43	437	120	39		
	13		2.00	47	B	40	468	110	41		38
4- 8	12	M	2.50	33	A	10	432	108	55	b	
	13		2.20	33	A	10	472	99	56		
	13		2.00	32	A	9	500	93	57		56
4- 9	13	M	2.20	25	A	−1	483	94	46	b	
	13		2.00	26	A	1	511	89	52		
	13		1.80	25	A	0	540	83	51		50
4-12	14	M	1.50	15	A	−1	604	74	51	c	
	14		1.40	15	A	2	620	71	45		48
4-13	13	M	1.80	20	A	0	549	85	52	d	
	14		1.60	21	A	1	572	77	40		
	14		1.50	19	A	−1	582	73	39		44
4-14	13	M	2.20	22	A	10	483	105	47	c	
	13		2.00	21	A	9	510	97	47		
	13		1.80	21	A	9	541	90	50		48
4-15	13	M	2.20	26	A	10	478	103	42	c	
	13		2.00	24	A	8	507	96	50		
	13		1.80	24	A	8	535	89	45		46
4-16	13	M	2.00	25	A	13	506	99	49	b	
	13		1.80	26	A	13	536	91	50		
	13		1.50	25	A	15	584	80	48		48
4-17	13	M	2.00	28	A	19	502	102	51	b	
	13		1.80	26	A	16	535	93	50		
	14		1.50	24	A	15	583	81	50		
	15	T	2.50	67	C	377	223	401	53	d	
	16		2.20	68	C	383	273	365	55		
	16		2.00	65	C	402	306	349	59		52
4-18	12	M	2.50	46	8	67	384	157	23	d	
	13		2.00	46	B	68	452	135	27		
	14		1.50	48	B	73	531	109	36		29
4-19	13	M	2.00	48	B	50	457	118	37	d	
	13		1.80	48	B	50	487	109	38		
	14		1.50	46	B	50	540	95	40		38
4-20	13	M	2.50	43	A	42	395	132	36	d	
	13		2.20	43	A	42	437	121	32		
	13		2.00	42	A	41	466	113	38		35
4-21	13	M	2.20	44	A	43	436	122	32	d	
	13		2.00	43	A	42	468	113	38		
	13		1.80	41	A	38	502	103	46		28
4-23	13	M	2.50	39	A	25	413	118	44	b	
	13		2.20	37	A	21	455	107	44		
	13		2.00	38	A	21	484	99	45		44
4-24	13	M	2.50	31	A	8	435	107	55	b	
	13		2.00	28	A	2	509	89	54		
	14		1.50	25	A	2	586	72	53		54
4-25	13	M	2.50	25	A	9	442	111	42	b	
	13		2.00	24	A	5	510	92	43		
	14		1.50	19	A	3	589	75	45		43
			Long method						41		
4-26	13	M	2.50	22	A	9	445	112	46	b	
	13		2.20	21	A	7	488	101	48		
	13		2.00	21	A	5	517	94	51		48
4-27	13	M	2.50	24	A	6	442	109	46	b	
	13		2.20	24	A	6	485	100	46		
	13		2.00	22	A	3	515	92	50		47
4-28	13	M	2.50	19	A	3	453	107	45	b	
	13		2.00	18	A	2	522	93	54		
	15		1.50	18	A	0	594	73	48		49
			Long method						44		
4-29	13	M	2.50	20	A	16	446	120	48	c	
	13		2.20	18	A	15	487	110	42		
	13		2.00	16	A	11	523	100	51		47
4-30	13	M	2.50	42	A	55	390	145	35	d	
	13		2.20	40	A	53	434	132	35		
	13		2.00	39	A	51	466	122	38		36
5- 1	15	T	2.50	75	C	11	351	129	36	c	
	16		2.00	69	C	6	424	110	44		
	17		1.50	73	C	−3	505	91	47		42
			Long method						49		
5- 2	13	M	2.50	14	A	2	462	110	40	c	
	13		2.20	14	A	2	509	102	50		
	13		2.00	13	A	0	536	93	50		
1952—Continued											
5- 2	18	T	1.23	76	B	24	552	68	40	c	
	18		1.19	81	B	26	553	67	37		
	18		1.17	80	B	28	558	68	42		42
5- 3	15	M	1.47	19	A	3	596	74	46	c	
	15		1.43	20	A	7	605	72	49		
	15		1.40	19	A	2	609	70	48		48
5- 4	13	M	2.50	14	A	3	469	105	44	b	
	13		2.20	14	A	−3	508	97	46		
	13		2.00	14	A	−4	537	90	52		
	16	T	1.50	21	A	99	542	159	57	c	
	17		1.40	21	A	94	560	150	52		
	17		1.30	22	A	94	575	143	52		50
5- 5	13	M	2.50	20	A	23	441	125	35	c	
	13		2.00	20	A	20	510	106	43		
	15		1.50	19	A	24	584	88	40		
			Long method						39		
	15	T	2.50	9	A	144	403	305	45	c	
	16		2.00	8	A	133	486	243	47		
	16		1.50	8	A	127	564	188	42		42
			Long method						64		
5- 8		T	Long method						31		
5- 9	13	M	2.50	38	A	35	405	128	33	d	
	13		2.20	38	A	33	444	116	33		
	13		2.00	39	A	35	471	109	34		33
		T	Long method						19		
5-10	13	M	2.50	42	A	13	415	107	50	c	
	13		2.20	41	A	14	453	98	42		
	13		2.00	41	A	14	482	92	48		47
5-11	13	M	2.50	24	A	19	436	121	34	c	
	13		2.00	22	A	19	505	105	36		
	15		1.50	20	A	19	585	84	43		38
			Long method						45		
5-12	13	M	2.50	29	A	29	419	128	36	c	
	13		2.20	28	A	25	461	115	36		
	13		2.00	27	A	26	492	108	41		38
5-13	13	M	2.50	31	A	15	425	114	36	d	
	13		2.20	32	A	16	465	106	37		
	13		2.00	32	A	16	491	99	44		
	15	T	2.00	30	B	206	449	184	63	d	
	16		1.80	25	B	221	489	176	59		
	16		1.50	26	8	289	528	171	54		49
5-14	13	M	2.50	33	A	19	422	116	42	b	
	13		2.20	33	A	17	462	106	47		
	13		2.00	32	A	16	493	99	49		
	16	T	1.50	35	B	267	511	167	59	d	
	17		1.40	35	B	301	526	167	57		
	17		1.30	36	B	315	540	161	50		48
5-15	13	M	2.50	28	A	19	432	118	43	d	
	13		2.20	27	A	15	467	107	31		
	13		2.00	26	A	16	502	100	45		40
5-16	13	M	2.50	19	A	−2	457	104	47	b	
	13		2.20	18	A	−2	497	96	45		
	13		2.00	17	A	−4	527	89	48		47
5-17	13	M	2.50	16	A	0	463	106	42	c	
	13		2.20	16	A	−1	503	97	44		
	14		2.00	16	A	0	533	92	51		46
5-18	13	M	2.50	20	A	29	439	132	41	b	
	13		2.20	19	A	28	481	121	40		
	14		2.00	19	A	28	511	113	44		
	16	T	1.50	55	C	98	492	139	50	c	
	17		1.40	54	C	97	510	133	50		
	17		1.30	58	C	86	529	124	47		44
5-19	13	M	2.50	33	A	49	410	144	38	c	
	13		2.20	32	A	48	449	132	38		
	14		2.00	32	A	48	481	123	44		40
5-20	15	M	1.45	23	A	13	592	76	48	b	
	15		1.42	25	A	16	595	77	48		
	16		1.40	25	A	11	599	73	45		47
5-21	13	M	2.50	32	A	6	436	105	50	c	
	13		2.20	31	A	5	472	96	44		
	14		2.00	31	A	8	498	92	55		
	15	T	2.50	23	A	127	360	270	48	d	
	15		1.98	23	A	134	442	230	64		
	16		1.80	23	A	128	475	208	59		52
5-22	13	M	2.50	35	A	8	430	104	51	b	
	14		2.00	35	A	8	498	90	55		
	15		1.50	33	A	7	572	73	54		
			Long method						41		
1952—Continued											
5-22	15	T	2.50	60	C	197	306	269	68	b	
	15		2.00	57	C	191	391	221	69		
	16		1.80	53	C	198	426	206	68		60
5-23	13	M	2.50	25	A	−1	449	101	50	b	
	13		2.20	24	A	−5	491	92	52		
	14		2.00	25	A	−2	518	87	57		
	15	T	2.50	48	C	117	340	203	55	c	
	15		2.00	48	C	117	413	175	57		
	16		1.70	51	C	122	460	159	55		54
5-24	13	M	2.50	25	A	3	445	105	48	b	
	13		2.20	27	A	5	482	98	47		
	14		2.00	28	A	6	511	92	55		
	15	T	2.00	67	C	201	366	228	52	c	
	16		1.80	71	C	219	389	222	58		
	16		1.50	74	C	269	434	213	57		52
5-25	13	M	2.50	21	A	−2	453	101	48	b	
	13		2.20	21	A	−4	493	93	49		
	14		2.00	21	A	−1	519	89	52		50
5-26	13	M	2.50	10	A	−6	484	104	42	b	
	13		2.20	9	A	−8	527	95	47		
	14		2.00	9	A	−4	551	92	44		44
5-27	13	M	2.50	13	A	−4	476	104	45	b	
	13		2.20	12	A	−5	517	96	49		
	14		2.00	13	A	−3	543	91	51		48
5-28	13	M	2.50	37	A	1	428	97	45	c	
	13		2.20	36	A	0	469	89	46		
	14		2.00	37	A	1	497	84	53		
	18	T	1.14	25	A	25	600	91	41	c	
	18		1.12	25	A	17	614	86	39		
	18		1.09	25	A	19	620	85	40		44
5-29	13	M	2.50	52	B	17	414	99	53	b	
	14		2.00	48	B	15	479	86	47		
	15		1.50	43	A	18	559	76	52		
			Long method						45		
	15	T	2.50	76	D	57	340	149	45	c	
	15		2.00	80	D	62	409	135	51		
	16		1.80	81	D	59	438	126	48		50
5-30	13	M	2.50	46	A	16	411	107	44	c	
	13		2.20	43	A	14	452	98	41		
	14		2.00	44	A	14	485	92	51		45
5-31	15	T	2.50	33	B	266	348	244	57	c	
	15		2.00	34	8	272	422	208	57		
	16		1.80	39	B	308	441	205	55		56
6- 2	13	M	2.50	38	A	12	419	107	41	b	
	13		2.20	39	A	12	456	98	38		
	14		2.00	41	A	14	485	92	50		43
6- 3	13	M	2.50	46	B	27	407	114	41	b	
	13		2.20	47	8	26	444	104	38		
	14		2.00	50	B	27	471	96	45		41
6- 4	13	M	2.50	31	A	7	429	105	44	b	
	13		2.20	31	A	2	471	94	41		
	14		2.00	30	A	1	504	88	49		45
6- 5	13	M	2.50	13	A	−8	471	100	40	a	
	13		2.20	13	A	−8	512	93	40		
	14		2.00	13	A	−8	538	87	47		
	15	T	2.00	94	D	103	356	179	25	d	
	16		1.80	91	D	102	385	168	28		
	16		1.50	81	D	76	465	130	32		39
6- 6	13	M	2.50	11	A	−9	489	101	44	a	
	13		2.20	10	A	−9	527	93	46		
	14		2.00	10	A	−9	553	87	48		
	15	T	2.50	47	C	50	375	152	63	c	
	15		2.00	46	C	48	446	132	65		
	16		1.80	49	C	39	477	121	62		50
6- 7	16	T	1.50	44	B	44	520	113	45	c	
	16		1.40	46	B	68	525	118	40		
	17		1.30	44	B	22	556	99	44		43
6- 8	13	M	2.50	34	A	16	428	112	56	b	
	13		2.20	33	A	12	469	102	50		
	14		2.00	31	A	12	502	95	55		
	15	T	2.50	41	8	24	385	138	40	c	
	15		2.00	42	B	25	450	122	43		
	16		1.50	45	B	34	521	109	47		51
			Long method						22		
6-10	13	M	2.50	19	A	25	444	129	37	a	
	14		2.20	18	A	25	483	118	36		
	14		2.00	20	A	26	510	111	42		

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H₂O		Function	Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1952—Continued											
6–10	15	T	2.50	30	8	22	400	133	41	b	
	15		2.00	31	8	6	468	113	44		
	16		1.50	33	8	2	541	93	41		40
			Long method						37		
6–11	15	T	2.50	31	8	31	405	137	57	c	
	15		2.00	31	B	—3	476	110	51		
	16		1.50	22	8	—14	565	91	52		53
			Long method						42		
6–12	15	T	2.50	31	8	—11	403	122	38	c	
	15		2.00	31	8	—11	470	107	42		
	16		1.80	30	8	—20	505	98	46		42
6–13	15	T	2.50	34	8	40	371	142	52	b	
	15		2.00	37	8	26	451	121	53		
	16		1.80	35	8	13	491	109	50		52
6–14	15	T	2.50	18	A	30	422	146	43	b	
	15		2.00	17	A	27	494	126	45		
	16		1.80	17	A	25	523	117	45		44
6–15	15	T	2.50	12	A	124	393	276	51	d	
	15		2.00	14	A	132	460	237	54		
	16		1.80	17	A	128	491	214	55		53
6–16	15	T	2.50	22	A	64	401	184	53	c	
	15		2.00	23	A	69	463	165	50		
	16		1.80	22	A	63	496	150	48		50
6–17	15	T	2.50	28	B	266	356	244	40	p	
	16		1.80	23	8	321	437	208	25		
	17		1.30	40	8	415	496	184	16		
			Long method						891		
6–18	15	M	1.70	8	A	16	589	95	46	d	
	15		1.60	8	A	17	608	91	53		
	16		1.50	9	A	19	608	88	43		
	15	T	2.50	19	A	51	412	172	50	b	
	15		2.00	21	A	44	480	141	47		
	16		1.50	23	A	39	544	116	48		48
			Long method						44		
6–19	15	T	2.50	32	B	—21	411	117	62	c	
	15		2.00	31	8	—28	481	101	63		
	16		1.50	29	8	—33	555	85	60		62
			Long method						39		
6–20	13	M	2.50	15	A	19	460	124	43	d	
	14		2.20	14	A	15	501	113	44		
	14		2.00	14	A	14	529	104	50		
	15	T	2.50	19	A	89	395	222	50	b	
	15		2.00	16	A	89	469	191	45		
	16		1.50	21	A	78	541	147	44		46
			Long method						37		
6–21	13	M	2.50	14	A	15	462	119	42	b	
	14		2.20	14	A	14	501	111	41		
	14		2.00	14	A	11	529	102	48		
	15	T	2.50	38	8	170	366	200	62	d	
	15		2.00	38	8	161	443	170	63		
	16		1.50	51	C	72	510	127	53		47
			Long method						33		
6–22	15	T	2.50	78	D	40	355	122	50	c	
	15		2.00	77	D	32	427	102	48		
	16		1.80	80	D	30	457	92	51		50
6–24	13	M	2.50	19	A	20	447	124	40	b	
	14		2.20	19	A	18	485	112	36		
	14		2.00	20	A	17	515	104	43		
	16	T	1.50	118	D	50	478	88	47	c	
	17		1.40	118	D	48	496	84	45		
	17		1.30	123	D	57	508	88	46		42
6–25	13	M	2.50	15	A	18	459	123	42	c	
	14		2.20	14	A	17	500	114	43		
	14		2.00	14	A	17	529	106	50		
	15	T	2.50	21	A	21	426	132	50	b	
	15		2.00	21	A	21	470	117	52		
	16		1.80	23	A	22	515	110	51		48
6–26	13	M	2.50	21	A	51	428	151	40	d	
	14		2.20	22	A	48	466	137	41		
	14		2.00	22	A	53	492	131	38		
	15	T	2.50	33	8	95	377	166	44	b	
	15		2.00	35	8	85	445	142	47		
	16		1.80	36	8	89	472	137	45		43
6–27	13	M	2.50	41	A	58	396	147	39	d	
	14		2.20	35	A	53	439	135	34		
	14		2.00	34	A	54	472	126	38		
	15	T	2.50	51	C	76	346	172	44	c	
	15		2.00	52	C	70	416	147	38		
	16		1.80	51	C	64	448	136	38		39
1952—Continued											
6–28	15	T	2.50	43	C	54	372	153	57	d	
	15		2.20	50	C	53	417	143	70		
	15		2.00	48	C	48	414	133	60		62
6–29	15	T	2.50	76	D	40	354	126	48	b	
	15		2.00	77	D	38	425	109	52		
	16		1.50	76	D	37	454	101	48		49
6–30	15	T	2.50	23	A	8	424	117	48	a	
	15		2.00	21	A	5	491	100	45		
	16		1.80	24	A	5	516	94	47		47
7– 1	15	T	2.50	19	A	8	424	121	33	c	
	15		2.00	19	A	6	488	104	33		
	16		1.80	20	A	7	514	99	35		34
7– 2	15	T	2.50	42	8	62	365	153	37	c	
	15		2.00	44	8	55	427	134	31		
	16		1.80	45	8	65	453	130	28		32
7– 3	13	M	2.50	22	A	38	433	139	42	c	
	14		2.20	20	A	30	476	122	33		
	14		2.00	21	A	33	504	115	44		
	15	T	2.50	34	8	—28	404	115	44	d	
	15		2.00	37	8	—2	454	111	37		
	16		1.80	40	8	32	471	117	35		41
7– 4	13	M	2.50	58	B	51	386	134	39	c	
	14		2.00	56	8	53	453	117	37		
	15		1.50	58	8	57	529	96	45		
			Long method						38		
	15	T	2.50	102	D	73	313	157	45	c	
	15		2.00	100	D	61	390	124	37		
	16		1.80	101	D	62	420	119	37		40
7– 5	13	M	2.50	66	8	56	373	133	41	b	
	14		2.20	65	8	55	415	123	38		
	14		2.00	68	8	59	443	117	43		41
7– 6	13	M	2.50	46	A	45	396	133	40	c	
	14		2.20	44	A	44	436	123	41		
	14		2.00	42	A	45	466	116	42		
	15	T	2.00	7	A	2	532	108	41	b	
	16		1.80	8	A	—2	556	99	40		
	16		1.50	7	A	3	598	95	40		40
7– 7	13	M	2.50	36	A	40	412	134	45	b	
	14		2.20	35	A	40	451	124	43		
	14		2.00	36	A	41	481	116	48		
	15	T	2.00	35	8	113	429	152	24	d	
	16		1.80	40	8	113	455	144	29		
	16		1.50	38	8	58	516	115	32		41
7– 8	13	M	2.50	51	8	52	389	137	35	d	
	14		2.20	52	8	52	429	127	38		
	15	T	2.50	62	C	46	351	151	48	b	
	15		2.00	54	C	36	426	126	44		
	16		1.80	58	C	32	455	117	41		42
7– 9	13	M	2.50	64	8	44	371	123	22	d	
	14		2.20	66	8	46	411	114	25		
	14		2.00	60	8	42	439	106	21		
	16	T	1.80	83	D	28	451	89	43	b	
	16		1.60	80	D	25	482	82	37		
	16		1.50	84	D	25	501	78	44		38
7–10	13	M	2.50	56	8	57	380	141	39	c	
	14		2.20	59	8	59	422	131	44		
	14		2.00	62	8	61	451	122	48		
	15	T	2.50	106	D	40	337	110	43	c	
	15		2.00	99	D	35	410	94	40		
	16		1.50	100	D	30	488	76	36		42
7–11	13	M	2.50	40	A	34	408	126	47	c	
	14		2.20	37	A	33	449	117	41		
	14		2.00	38	A	35	476	110	41		
	17	T	1.40	68	C	—34	531	72	44	b	
	17		1.30	58	C	—34	556	68	45		
	17		1.20	62	C	—40	569	64	40		43
7–12	15	T	2.50	23	A	3	414	111	43	a	
	15		2.00	24	A	—1	488	93	45		
	16		1.50	27	8	—57	556	78	45		44
7–13	15	T	2.50	24	A	9	418	118	38	a	
	15		2.00	26	8	—22	480	102	40		
	16		1.80	25	A	8	510	96	39		39
7–14	13	M	2.50	20	A	29	435	132	38	c	
	14		2.20	20	A	29	474	121	41		
	15	T	2.50	50	C	90	333	181	25	d	
	15		2.00	54	C	90	400	159	26		
	16		1.80	60	C	91	428	151	32		35
1952—Continued											
7–15	15	T	2.50	85	D	104	291	214	32	c	
	15		2.00	79	D	97	377	178	34		
	16		1.80	76	D	88	420	157	40		35
7–16	15	T	2.00	72	C	102	381	169	32	d	
	16		1.80	70	C	98	419	155	37		
	16		1.50	72	C	98	466	141	38		36
7–17	13	M	2.50	12	A	48	445	153	38	d	
	14		2.20	9	A	39	495	135	35		
	14		2.00	9	A	45	526	130	37		37
7–18	13	M	2.50	17	A	83	425	185	41	d	
	14		2.20	17	A	81	467	167	39		
	14		2.00	18	A	82	493	155	38		39
7–19	13	M	2.50	13	A	45	453	150	44	c	
	14		2.20	12	A	41	496	135	47		
	14		2.00	12	A	39	527	124	46		
	16	T	1.60	29	8	—77	536	74	38	b	
	16		1.50	27	8	—82	554	71	40		
	17		1.40	28	8	—84	570	67	42		42
7–20	13	M	2.50	7	A	20	479	129	35	b	
	13		2.20	6	A	20	524	119	41		
	14		2.00	6	A	23	546	113	40		
	15	T	2.50	83	D	27	354	104	37	c	
	15		2.20	83	D	26	394	96	38		
	15		2.00	89	D	28	422	90	45		39
7–21	13	M	2.50	18	A	13	452	117	35	b	
	14		2.00	16	A	13	535	102	48		
	15		1.50	13	A	14	606	83	50		44
			Long method						44		
7–22	13	M	2.50	10	A	—2	481	108	44	b	
	13		2.20	10	A	1	522	101	47		
	14		2.00	10	A	1	549	95	51		
	15	T	2.50	150	D	105	265	174	42	d	
	15		2.00	157	D	110	331	154	42		
	16		1.80	150	D	104	369	142	33		44
7–23	13	M	2.50	14	A	7	466	115	45	c	
	13		2.20	14	A	5	508	104	48		
	14		2.00	14	A	1	536	94	52		48
7–25	14	M	2.10	15	A	5	514	100	41	d	
	14		2.00	15	A	5	529	96	45		43
7–26	14	M	2.00	34	A	18	491	99	48	c	
	14		1.80	35	A	19	520	93	51		
	15		1.50	33	A	19	568	80	48		49
7–30	13	M	2.50	64	B	32	390	110	40	d	
	13		2.20	69	8	39	424	106	40		
	14		2.00	68	8	42	450	101	41		40
7–31	13	M	2.20	54	8	32	438	106	49	d	
	14		2.00	57	8	38	455	104	40		
	16	T	1.80	159	D	99	379	133	47	d	
	16		1.60	168	D	113	400	135	42		44
8– 1	15	T	2.50	108	D	37	340	104	49	c	
	16		2.00	106	D	37	407	93	46		
	16		1.80	111	D	40	433	90	43		46
8– 2	13	M	2.50	8	A	—10	497	100	60	b	
	13		2.20	7	A	—11	536	93	60		
	14		2.00	7	A	—10	564	88	71		
	15	T	2.50	96	D	25	355	95	44	b	
	16		2.00	89	D	20	431	81	48		
	16		1.80	85	D	18	461	76	49		55
8– 3	13	M	2.50	14	A	6	467	114	47	b	
	13		2.20	13	A	5	506	104	45		
	14		2.00	13	A	4	535	96	50		
	15	T	2.50	84	D	43	341	126	31	d	
	16		2.00	83	D	41	410	109	30		
	16		1.50	94	D	44	480	94	27		44
			Long method						24		
8– 4	13	M	2.50	18	A	1	457	107	44	d	
	13		2.20	18	A	4	497	100	45		
	14		2.00	18	A	4	527	94	54		48
8– 5	13	M	2.50	15	A	12	457	118	38	c	
	14		2.00	15	A	14	524	103	45		
	15		1.50	15	A	11	602	81	52		45
			Long method						46		
8– 6	13	M	2.50	18	A	43	439	145	40	c	
	13		2.20	18	A	43	480	133	45		
	14		2.00	18	A	47	507	127	44		43
8– 7	13	M	2.50	21	A	27	438	129	36	d	
	13		2.20	19	A	23	483	117	37		
	13		2.00	18	A	23	514	109	43		39

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1952—Continued											
8– 9	13	M	2.20	31	A	22	463	110	42	c	
	13		2.00	31	A	22	497	103	49		
	14		1.80	30	A	20	525	95	50		47
8–10	13	M	2.20	22	A	12	486	106	44	c	
	13		2.00	19	A	9	519	98	46		
	14		1.80	19	A	14	547	95	49		46
8–11	15	T	2.20	12	A	−11	480	96	37	c	
	16		2.00	13	A	−11	519	90	40		
	16		1.80	14	A	−12	540	83	39		39
8–12	13	M	2.00	51	B	48	455	115	35	d	
	14		1.80	49	B	48	486	107	34		
	14		1.70	51	B	48	497	102	28		
	15	T	2.50	28	B	−34	410	111	38	c	
	16		2.00	28	B	−42	480	95	41		
	16		1.80	29	B	−49	506	88	37		36
8–13	15	T	2.50	53	C	3	368	121	36	b	
	15		2.20	54	C	3	409	112	41		
	16		2.00	52	C	−1	438	104	39		39
8–14	15	T	2.50	60	C	−8	365	115	31	d	
	15		2.20	64	C	−10	404	105	33		
	16		2.00	58	C	−16	435	95	31		32
8–15	13	M	2.20	58	B	40	429	113	37	d	
	13		2.00	57	B	42	466	106	40		
	14		1.80	58	B	42	485	98	43		
	19	T	1.25	109	D	58	504	93	24	d	
	19		1.21	112	D	60	508	92	22		
	19		1.18	116	D	61	516	91	22		31
8–16	13	M	2.50	13	A	−4	475	104	46	c	
	13		2.20	13	A	−4	513	96	46		
	13		2.00	11	A	−6	547	89	52		48
8–17	13	M	2.50	13	A	0	475	108	49	b	
	13		2.20	13	A	−3	512	97	43		
	13		2.00	13	A	−1	540	92	51		48
8–18	13	M	2.50	7	A	−7	498	104	44	b	
	13		2.00	7	A	−7	563	90	49		
	14		1.50	7	A	−5	628	74	48		47
			Long method						47		
8–19	13	M	2.50	12	A	−1	480	108	53	a	
	13		2.20	12	A	−2	518	98	52		
	13		2.00	12	A	−2	544	92	52		
	15	T	2.50	192	D	95	263	134	61	d	
	16		2.20	200	D	99	306	126	64		
	16		2.00	201	D	97	337	117	53		54
8–20	13	M	2.20	13	A	6	508	105	50	b	
	13		2.00	14	A	6	534	98	53		
	15	T	2.50	178	D	83	274	127	54	d	
	16		2.00	184	D	87	339	114	40		
	16		1.80	185	D	88	374	108	45		50
8–21	15	T	2.50	88	D	30	352	107	44	d	
	16		2.00	94	D	32	415	93	43		
	16		1.80	91	D	31	449	88	45		44
8–22	13	M	2.20	21	A	38	468	128	40	c	
	13		2.00	21	A	38	500	119	45		
	14		1.80	21	A	31	534	106	48		
	15	T	2.50	82	D	26	357	103	33	d	
	16		2.00	77	D	22	430	89	35		
	17		1.50	77	D	32	495	88	32		40
			Long method						26		
8–23	13	M	2.52	26	A	17	432	117	41	c	
	13		2.00	28	A	16	472	107	44		
	15	T	2.50	61	C	−30	376	99	32	c	
	16		2.00	62	C	−32	441	86	33		
	16		1.80	58	C	−38	475	78	37		38
8–24	13	M	2.50	14	A	4	472	111	54	c	
	13		2.20	11	A	3	510	103	29		
	13		2.00	13	A	5	534	97	46		
	15	T	2.50	82	D	30	349	109	27	d	
	16		2.20	86	D	33	384	103	29		
	16		2.00	86	D	33	412	98	28		39
8–25	13	M	2.50	15	A	10	459	116	41	c	
	13		2.20	15	A	10	499	108	43		
	13		2.00	14	A	9	531	100	48		44
8–26	13	M	2.20	18	A	6	494	103	48	c	
	13		2.00	17	A	7	522	97	50		
	13		1.80	18	A	8	550	90	51		
	18	T	1.30	187	D	72	483	76	49	d	
	18		1.22	190	D	73	494	74	42		48
1952—Continued											
8–27	13	M	2.50	14	A	9	465	116	49	c	
	13		2.20	15	A	9	506	106	51		
	13		2.00	14	A	8	534	99	55		52
8–28	13	M	2.50	17	A	21	450	126	42	b	
	13		2.20	17	A	21	491	116	42		
	13		2.00	17	A	22	520	109	44		43
8–29	13	M	2.20	31	A	57	444	140	32	d	
	13		2.00	31	A	56	475	129	34		
	13		1.80	29	A	54	506	119	35		34
8–30	13	M	2.50	35	A	26	417	121	41	c	
	13		2.20	34	A	26	457	113	41		
	13		2.00	33	A	27	486	106	41		41
8–31	13	M	2.50	48	B	35	401	121	40	c	
	13		2.20	44	A	31	442	111	39		
	13		2.00	45	A	29	473	102	40		40
9– 1	17	T	1.55	137	D	76	437	108	31	d	
	17		1.48	135	D	74	449	104	29		
	17		1.42	138	D	72	462	100	28		29
9– 2	15	T	2.50	156	D	101	262	164	39	c	
	16		2.20	164	D	104	307	151	44		
	16		2.00	167	D	104	335	142	38		40
9– 3	12	M	2.50	39	A	52	396	144	37	d	
	13		2.20	42	A	54	434	132	38		
	13		2.00	42	A	56	460	125	39		
	15	T	2.50	135	D	75	297	137	51	d	
	16		2.20	132	D	72	341	126	44		
	16		2.00	131	D	69	371	118	35		40
9– 4	12	M	2.50	17	A	25	441	129	30	d	
	13		2.20	17	A	25	483	119	33		
	13		2.00	15	A	25	512	112	34		32
9– 5	12	M	2.50	11	A	19	460	126	27	d	
	13		2.00	10	A	16	535	107	36		
	14		1.50	9	A	12	610	83	43		35
			Long method						67		
9– 6	12	M	2.50	15	A	20	452	126	36	c	
	13		2.20	15	A	20	492	116	36		
	13		2.00	14	A	19	523	108	44		39
9– 7	13	M	2.20	11	A	28	506	123	41	c	
	13		2.00	10	A	28	531	116	44		
	13		1.80	10	A	31	560	109	40		42
9– 8	16	T	2.20	84	D	48	380	123	39	c	
	16		2.00	79	D	44	417	114	42		
	16		1.80	79	D	40	449	104	41		39
9–11	16	T	2.20	26	B	−22	456	107	46	b	
	16		2.00	27	B	−29	482	100	45		
	16		1.80	32	B	−32	504	94	50		47
9–12	16	T	2.00	57	C	74	420	150	56	c	
	16		1.80	55	C	76	455	143	58		
	17		1.50	50	C	17	520	99	44		53
9–13	16	T	2.50	33	B	−45	414	108	45	b	
	16		2.06	33	B	−54	472	94	45		
	17		1.50	33	B	−67	550	76	41		44
			Long method						37		
9–14	16	T	2.50	33	B	−31	409	114	46	b	
	16		2.00	34	B	−30	475	100	49		
	17		1.50	33	B	−57	548	78	44		46
9–15	16	T	2.50	22	A	−8	438	99	43	a	
	16		2.00	22	A	−11	501	84	43		
	17		1.50	26	A	−13	566	69	45		44
			Long method						43		
9–16	16	T	2.50	108	D	45	335	116	51	d	
	16		2.20	106	D	41	378	103	43		47
9–17	16	T	2.50	71	D	21	371	103	38	c	
	16		2.00	75	D	22	433	90	44		
	17		1.50	89	D	23	498	73	36		39
			Long method						24		
9–18	16	T	2.50	125	D	116	273	204	54	d	
	16		2.20	125	D	118	316	191	51		
	16		2.00	128	D	125	341	186	49		51
9–20	12	M	2.50	52	B	30	404	113	46	b	
	12		2.20	51	B	28	442	104	42		
	13		2.00	49	B	30	472	100	51		46
9–21	12	M	2.50	36	A	58	402	151	44	c	
	13		2.00	36	A	46	480	120	46		
	13		1.50	30	A	52	560	101	47		
			Long method						43		
	16	T	2.00	132	D	71	379	119	50	d	
	16		1.80	119	D	61	414	108	38		45
1952—Continued											
9–22	12	M	2.50	25	A	85	410	192	40	d	
	12		2.20	23	A	97	451	177	42		
	13		2.00	23	A	96	487	163	46		
	16	T	2.50	147	D	65	303	119	55	c	
	16		2.20	147	D	65	350	110	57		
	16		2.00	148	D	65	380	105	54		51
9–23	12	M	2.50	22	A	61	422	161	38	d	
	12		2.20	22	A	61	464	148	44		
	13		2.00	21	A	64	493	139	46		
	16	T	2.50	152	D	62	303	113	55	d	
	16		2.20	163	D	70	342	108	59		
	16		2.00	162	D	70	372	103	57		50
9–24	12	M	2.50	25	A	60	413	158	35	d	
	12		2.20	23	A	61	459	147	40		
	13		2.00	25	A	63	490	137	43		39
9–25	12	M	2.50	21	A	68	422	167	37	d	
	12		2.20	19	A	59	466	148	39		
	13		2.00	20	A	64	498	140	44		40
9–26	12	M	2.50	30	A	77	400	172	32	d	
	12		2.20	29	A	73	442	155	33		
	12		2.00	29	A	72	475	143	40		35
9–28	16	T	2.50	100	D	90	289	182	28	d	
	16		2.20	102	D	91	333	168	30		
	16		2.00	98	D	87	366	157	27		28
10– 1	12	M	2.50	20	A	106	407	204	31	d	
	12		2.00	19	A	96	484	165	27		
	13		1.50	16	A	78	572	120	40		33
			Long method						46		
10– 2	12	M	2.50	29	A	35	425	134	49	d	
	12		2.20	29	A	37	460	124	42		
	12		2.00	30	A	39	491	117	50		47
10– 3	12	M	2.50	33	A	68	398	163	37	d	
	12		2.20	33	A	66	439	147	41		
	13		1.80	33	A	68	502	127	42		40
10– 6	12	M	2.50	45	B	130	364	229	26	c	
	12		2.20	46	B	112	416	189	38		
	13		2.00	47	B	100	450	164	39		
	16	T	2.00	95	D	82	376	152	31	c	
	17		1.85	94	D	84	398	148	32		
	17		1.70	106	D	97	412	148	35		34
10– 8	12	M	2.50	17	A	7	463	112	53	b	
	12		2.20	17	A	7	503	103	51		
	12		2.00	16	A	6	531	96	55		53
10– 9	16	T	2.50	32	B	−38	415	105	44	c	
	17		2.00	33	B	−60	485	90	50		
	18		1.50	36	B	−76	546	74	40		45
			Long method						48		
10–10	12	M	2.50	16	A	47	443	145	49	c	
	12		2.00	15	A	36	519	120	50		
	13		1.50	12	A	28	599	92	50		
			Long method						53		
	16	T	2.50	21	A	−2	430	106	49	b	
	17		1.90	24	A	−3	509	89	52		
	18		1.42	23	A	−8	580	73	48		50
			Long method						36		
10–11	12	M	2.00	15	A	25	526	113	48	b	
	13		1.80	13	A	23	553	103	46		
	13		1.50	13	A	22	601	88	47		
	17	T	2.00	20	A	−4	499	92	44	b	
	17		1.90	21	A	−1	513	92	44		
	17		1.70	20	A	−4	541	84	42		45
10–12	12	M	2.50	19	A	32	436	135	42	d	
	12		2.20	21	A	43	470	132	38		
	12		2.00	19	A	50	502	130	41		
	16	T	2.50	26	B	−19	416	117	42	c	
	18		1.50	33	B	−15	539	92	40		41
			Long method						25		
10–13	12	M	2.50	6	A	3	499	113	46	c	
	12		2.20	6	A	2	539	103	52		
	12		2.00	5	A	0	566	96	56		
	16	T	2.50	29	B	−55	423	103	46	d	
	17		2.00	29	B	−49	482	93	43		
	18		1.50	42	B	3	522	99	37		47
			Long method						26		
10–14	12	M	2.50	13	A	56	454	160	47	d	
	12		2.20	14	A	52	496	143	55		
	12		2.00	13	A	53	526	134	58		53

TABLE 4.—*Determinations of the solar constant of radiation, September 30, 1939, through December 31, 1952*—Continued

Date and G.M.T.		Station	Air Mass	H_2O	Function		Pyrh.	Pyrn.	S.C.	Grade	Pfd. S.C.
1952—Continued											
10–15	13	M	1.40	14	A	36	616	91	55	c	
	14		1.36	14	A	39	622	90	51		
	14		1.32	14	A	35	631	85	53		
	16	T	2.10	47	C	49	415	137	29	d	
	17		2.00	49	C	56	424	137	31		
	17		1.90	54	C	61	432	137	32		45
10–16	12	M	2.50	30	A	60	409	154	38	d	
	12		2.20	32	A	55	447	139	38		
	12		2.00	31	A	58	475	131	36		37
10–17	14	M	1.16	28	A	57	625	82	60	d	
	15		1.14	26	A	51	634	78	56		
	15		1.12	30	A	56	632	78	58		58
10–18	12	M	2.50	27	A	67	413	165	43	d	
	12		2.20	28	A	68	457	151	50		
	12		1.80	26	A	68	517	129	41		45
10–19	12	M	2.20	29	A	59	449	143	35	d	
	12		2.00	28	A	54	482	129	35		
	12		1.80	28	A	54	516	119	42		
	18	T	1.54	36	B	−98	547	68	44	c	
	18		1.50	36	B	−98	553	67	43		
	18		1.46	34	B	−98	560	65	48		42
10–20	12	M	2.50	18	A	31	445	134	40	d	
	12		2.20	19	A	32	480	125	39		
	12		2.00	19	A	32	511	116	43		41
10–21	16	T	2.50	38	B	−46	402	109	36	c	
	17		2.00	35	B	−52	471	93	35		
	18		1.50	37	B	−64	543	77	43		38
			Long method						44		
10–22	12	M	2.50	29	A	56	404	153	25	d	
	12		2.20	28	A	54	451	139	33		
	12		2.00	27	A	53	481	129	33		
	16	T	2.50	18	A	−1	436	109	36	c	
	17		2.00	20	A	−1	502	95	45		
	18		1.50	27	A	22	548	100	37		35
			Long method						31		
10–23	12	M	2.50	37	A	42	409	135	42	c	
	12		2.20	37	A	46	449	128	46		
	12		2.00	37	A	54	477	125	47		
	16	T	2.50	14	A	−17	456	94	35	c	
	17		2.00	14	A	−18	519	82	35		
	18		1.50	19	A	1	570	77	39		40
			Long method						47		
10–24	13	M	1.60	18	A	37	568	101	49	c	
	13		1.50	18	A	43	584	99	48		
	13		1.40	19	A	42	603	93	52		
	17	T	2.20	48	C	−31	442	90	55	c	
	17		2.00	48	C	−31	465	86	50		
	17		1.90	47	C	−30	474	84	42		49
10–25	13	M	1.60	22	A	121	557	153	37	d	
	13		1.50	21	A	112	557	189	45		
	13		1.40	19	A	96	582	122	42		41
10–27	12	M	2.20	12	A	32	488	127	38	c	
	12		2.00	12	A	33	517	119	38		
	12		1.80	12	A	37	546	113	45		40
10–28	12	M	2.20	18	A	57	464	146	22	d	
	12		2.00	19	A	57	497	135	28		
	13		1.70	17	A	55	543	118	36		
	16	T	2.50	78	D	44	346	130	35	c	
	17		2.20	81	D	44	384	120	33		
	17		2.00	85	D	48	411	116	36		32
10–29	12	M	2.20	13	A	30	486	125	29	d	
	12		2.00	13	A	35	516	120	34		
	12		1.80	13	A	33	545	109	38		34
10–30	15	M	1.05	62	B	142	591	113	48	d	
	15		1.03	60	B	147	594	115	48		
	16		1.02	59	B	156	598	120	51		49
10–31	12	M	2.20	37	A	59	453	139	59	d	
	12		2.00	35	A	56	480	127	51		
	12		1.80	35	A	57	507	119	55		
	19	T	1.52	64	C	41	483	115	38	d	
	19		1.51	64	C	38	489	112	36		
	19		1.51	64	C	38	500	112	48		48
11– 1	16	T	2.50	37	B	−67	414	100	48	d	
	17		2.20	37	B	−75	457	92	46		47
11– 4	17	T	2.00	36	B	47	445	139	31	d	
	17		1.90	38	B	60	456	140	31		
	18		1.80	39	B	56	473	135	36		33
1952—Continued											
11– 7	13	M	1.60	28	A	37	552	98	50	d	
	13		1.50	29	A	37	567	93	48		
	13		1.40	27	A	32	585	85	43		47
11– 9	17	T	2.50	17	A	10	427	124	29	c	
	17		2.20	18	A	9	464	113	28		
	17		2.00	18	A	9	495	107	34		30
11–10	12	M	2.20	39	A	23	456	108	47	c	
	12		2.00	38	A	21	486	99	47		
	12		1.80	37	A	20	516	92	51		
	17	T	2.50	17	A	−16	452	93	44	b	
	17		2.20	17	A	−18	489	84	45		
	17		2.00	18	A	−17	515	80	45		46
11–11	12	M	2.50	26	A	51	425	148	50	c	
	12		2.20	27	A	48	467	135	50		
	12		2.00	26	A	46	500	123	54		51
11–12	12	M	1.80	26	A	104	502	154	38	d	
	13		1.60	29	A	111	535	144	44		
	13		1.50	31	A	117	549	139	48		43
11–13	12	M	2.50	34	A	109	387	201	33	d	
	12		2.20	35	A	116	436	187	43		
	12		2.00	33	A	120	470	178	51		41
11–14		M	Long method						46		
11–16	14	M	1.24	67	B	190	532	160	46	d	
	14		1.20	66	B	189	540	155	41		
	14		1.17	66	B	197	546	153	44		44
11–17	15	M	1.04	48	B	141	602	116	38	d	
	15		1.03	46	B	137	607	113	35		
	15		1.02	50	B	138	609	111	47		
	17	T	2.50	19	A	13	426	126	35	c	
	17		2.20	21	A	16	460	118	36		
	18		2.00	20	A	14	488	111	31		37
11–18	14	M	1.21	30	A	83	606	98	45	d	
	14		1.18	30	A	87	611	97	51		
	14		1.15	32	A	92	614	97	46		
	17	T	2.50	20	A	4	429	114	31	b	
	17		2.20	20	A	4	467	105	33		
	18		2.00	21	A	5	492	100	36		39
11–19	17	T	2.30	36	B	−48	438	103	48	b	
	17		2.20	35	B	−49	448	99	44		
	18		2.00	34	B	−47	482	94	51		48
11–20		M	Long method						39		
11–21	11	M	2.50	88	C	245	292	268	27	d	
	12		2.20	83	C	240	343	239	30		
	12		2.00	81	C	236	380	220	36		31
11–22	11	M	2.50	52	B	121	350	215	23	d	
	12		2.20	53	B	119	396	193	28		
	12		2.00	51	B	118	430	178	34		28
11–23	12	M	2.50	36	A	101	388	192	34	d	
	12		2.20	33	A	89	435	172	37		
	12		2.00	33	A	97	466	158	37		36
11–24	12	M	2.50	30	A	81	398	176	33	d	
	12		2.20	31	A	84	440	163	37		
	12		2.00	30	A	82	469	150	36		
	17	T	2.30	22	A	5	453	119	43	b	
	18		2.10	22	A	5	480	113	43		35
11–25	12	M	2.50	27	A	67	413	165	39	d	
	12		2.20	27	A	66	453	150	44		
	12		2.00	29	A	68	482	140	46		
	17	T	2.50	14	A	34	441	155	53	b	
	17		2.20	14	A	29	479	137	50		
	18		2.00	15	A	30	505	130	51		47
11–26	12	M	2.50	32	A	83	398	177	41	d	
	12		2.20	30	A	81	443	161	42		
	12		2.00	30	A	83	474	151	45		
	17	T	2.50	18	A	58	413	180	42	c	
	18		2.20	19	A	63	444	171	38		
	18		2.00	18	A	59	476	158	40		41
11–27	12	M	2.50	32	A	106	392	200	40	d	
	12		2.20	31	A	104	437	180	42		
	12		2.00	30	A	98	470	162	43		
	17	T	2.50	18	A	26	426	140	44	c	
	18		2.20	20	A	25	467	128	51		
	18		2.00	23	A	32	481	127	54		47
12– 1	13	M	1.44	52	B	165	503	169	16	p	
	13		1.38	53	B	168	511	165	22		
	13		1.34	54	B	166	521	159	28		
1952—Continued											
12– 7	12	M	2.20	77	C	189	365	209	35	d	
	12		2.00	76	C	184	401	193	36		
	12		1.80	69	C	139	441	174	46		39
12– 8	17	T	2.50	33	B	−23	418	117	58	c	
	18		2.20	33	B	−12	455	113	54		
	18		2.00	32	B	−2	479	110	52		55
12– 9	18	T	2.30	41	B	−7	428	120	53	c	
	18		2.20	39	B	0	441	118	51		
	18		2.00	40	B	−10	472	109	54		53
12–10	14	M	1.13	46	B	67	609	81	48	c	
	15		1.11	46	B	76	609	84	43		
	15		1.08	44	A	101	614	82	37		
	17	T	2.50	48	C	−16	402	107	56	c	
	18		2.20	45	B	−56	442	99	53		
	18		2.00	46	C	−50	468	94	56		49
12–11	14	M	1.23	32	A	48	609	82	50	d	
	14		1.20	33	A	58	611	84	54		
	17	T	2.50	25	B	−28	425	114	45	b	
	18		2.20	28	B	−25	460	106	47		
	18		2.00	34	B	−39	476	97	42		47
12–12	13	M	1.50	39	A	74	540	110	44	d	
	13		1.40	44	A	71	559	103	41		
	13		1.34	35	A	70	576	99	44		
	17	T	2.50	24	A	4	431	111	48	b	
	18		2.20	27	B	−32	461	104	41		
	18		2.00	27	B	−46	493	94	46		44
12–13	12	M	2.00	50	B	89	441	152	31	d	
	12		1.80	49	B	89	478	141	39		
	13		1.60	48	B	93	507	131	29		
	17	T	2.50	36	B	−62	414	102	45	b	
	18		2.20	38	B	−66	453	94	47		
	19		2.00	35	B	−66	482	88	44		42
12–14	12	M	2.20	39	A	68	433	146	41	d	
	12		2.00	37	A	67	465	135	39		
	12		1.80	39	A	69	498	123	49		
	17	T	2.50	76	D	24	373	104	49	b	
	18		2.20	74	C	−22	415	99	52		
	19		2.00	76	D	25	439	93	52		49
12–15	12	M	2.50	43	A	68	386	156	32	d	
	12		2.20	42	A	65	431	142	42		
	12		2.00	42	A	65	458	132	38		
	18	T	2.20	78	D	34	405	108	51	c	
	19		2.00	74	D	29	436	99	49		45
12–16	12	M	2.50	58	B	110	353	199	30	d	
	12		2.00	59	B	119	432	176	42		
	13		1.50	56	B	120	517	140	46		35
			Long method						43		
12–18	12	M	2.20	45	A	78	427	151	43	d	
	12		2.00	45	A	78	460	140	49		
	12		1.80	41	A	79	493	131	49		47
12–20	12	M	2.20	37	A	115	429	186	43	d	
	12		2.00	36	A	115	462	173	44		
	12		1.80	35	A	113	500	158	50		46
12–21	18	T	2.50	15	A	30	440	148	56	c	
	18		2.20	16	A	32	476	139	55		
	19		2.00	17	A	32	497	131	51		54
12–22	18	T	2.50	19	A	14	434	127	45	c	
	18		2.20	22	A	12	466	114	43		
	19		1.90	16	A	9	518	106	40		43
12–26	18	T	2.50	30	B	83	394	159	52	c	
	18		2.20	29	B	71	436	143	47		
	19		2.00	29	B	54	466	130	41		47
12–28	12	M	2.50	109	C	217	289	256	34	d	
	12		2.20	107	C	210	339	229	38		
	12		2.00	105	C	202	373	207	36		36
12–29	12	M	2.50	76	C	283	314	291	63	d	
	12		2.20	76	C	249	366	244	56		
	12		2.00	71	C	242	410	222	68		62
12–30	12	M	2.50	75	B	151	328	236	38	d	
	12		2.00	75	B	161	403	208	44		
	13		1.50	67	B	160	497	166	53		45
			Long method						82		
12–31	12	M	2.00	69	B	128	417	180	50	d	
	12		1.80	64	B	125	454	164	54		
	13		1.60	67	B	130	493	151	58		54

Table 5.—*Decade, monthly, and yearly means of solar constants, 1939–52*

[Preferred values; those graded poor omitted]

Year and month	1st decade	2d decade	3d decade	Month
1939				
10	1.943	1.944	1.943	1.944
11	51	48	44	48
12	41	52	46	47
			Yearly mean	44
1940				
1	46	46	47	47
2	44	45	46	45
3	46	40	43	43
4	44	45	53	48
5	47	47	50	48
6	49	47	48	48
7	50	49	47	49
8	49	46	46	47
9	50	50	46	49
10	46	43	49	46
11	50	44	42	45
12	47	52	50	49
			Yearly mean	47
1941				
1	46	53	41	48
2	43	50	54	48
3	50	45	53	50
4	48	46	43	47
5	47	46	58	51
6	50	43	52	48
7	50	52	54	52
8	56	49	47	50
9	53	50	41	48
10	53	48	49	50
11	52	48	48	49
12	51	50	54	51
			Yearly mean	49
1942				
1	55	45	47	49
2	48	49	47	48
3	43	42	43	43
4	44	46	44	45
5	44	48	49	47
6	49	47	49	48
7	49	49	46	48
8	45	46	45	45
9	47	38	46	44
10	45	43	44	44
11	46	48	50	48
12	47	40	45	44
			Yearly mean	46
1943				
1	42	39	44	42
2	48	44	42	44
3	41	46	43	43
4	42	46	46	45
5	47	46	45	46
6	50	50	51	51
7	50	43	50	48
8	48	49	52	49
9	45	49	47	47
10	45	49	45	46
11	45	45	40	43
12	45	45	52	48
			Yearly mean	46
1944				
1	50	46	46	48
1944—*Continued*				
2	1.953	1.951	1.953	1.952
3	41	45	45	44
4	44	45	44	44
5	47	45	44	46
6	46	44	43	44
7	46	45	46	45
8	49	42	37	43
9	38	45	37	40
10	45	41	40	43
11	47	46	45	46
12	48	46	44	46
			Yearly mean	45
1945				
1	38	41	38	39
2	47	46	45	46
3	44	45	41	44
4	45	49	49	48
5	47	45	48	47
6	46	44	42	44
7	50	46	47	47
8	48	42	30	41
9	40	42	44	42
10	45	42	37	42
11	49	43	49	47
12	42	46	42	43
			Yearly mean	44
1946				
1	43	45	50	46
2	42	38	39	39
3	38	36	41	38
4	48	44	43	46
5	55	56	50	53
6	51	53	53	52
7	49	54	48	51
8	47	46	51	48
9	53	49	47	50
10	45	50	50	48
11	52	54	52	53
12	59	53	53	54
			Yearly mean	48
1947				
1	56	50	52	53
2	46	48	52	49
3	41	45	47	45
4	44	48	53	49
5	52	51	49	50
6	46	54	53	51
7	50	44	46	47
8	47	47	51	49
9	46	49	46	47
10	50	51	55	52
11	56	52	51	53
12	54	52	55	54
			Yearly mean	50
1948				
1	54	49	51	51
2	56	52	51	53
3	53	45	48	49
4	57	50	50	51
5	52	52	53	52
6	58	54	55	56
7	59	57	56	57
1948—*Continued*				
8	1.957	1.954	1.948	1.953
9	51	58	58	56
10	52	51	51	52
11	56	55	56	56
12	55	56	54	55
			Yearly mean	53
1949				
1	54	50	57	55
2	59	58	49	56
3	50	50	43	47
4	47	46	53	49
5	50	58	49	51
6	46	38	48	44
7	50	43	49	49
8	50	52	45	49
9	46	49	46	47
10	47	51	52	50
11	51	54	52	52
12	54	52	56	54
			Yearly mean	50
1950				
1	58	52	57	56
2	52	45	51	49
3	46	49	46	47
4	49	42	46	45
5	48	43	53	49
6	49	49	48	49
7	45	48	47	47
8	51	52	46	50
9	40	47	48	47
10	48	53	55	52
11	51	50	51	51
12	51	51	46	49
			Yearly mean	49
1951				
1	47	58	47	50
2	50	50	62	52
3	57	54	55	55
4	42	44	43	43
5	47	35	41	40
6	40	42	48	44
7	47	48	45	46
8	44	47	54	48
9	52	45	45	47
10	46	48	45	47
11	45	38	42	42
12	46	46	45	46
			Yearly mean	47
1952				
1	41	51	52	45
2	37	41	44	41
3	34	41	35	36
4	45	43	44	44
5	43	44	50	46
6	44	50	47	47
7	39	39	45	40
8	46	42	42	43
9	37	46	41	42
10	43	45	41	43
11	41	42	38	40
12	49	44	49	47
			Yearly mean	43

TABLE 6a.—*Long-method days, showing atmospheric transmission for various places and wavelengths, Montezuma, Chile, 1940–50*

[Figures in parentheses represent doubtful values]

Date	Precipitable water in mm.	Pyrheliometry at mean solar distance, air mass 2.0	Pl. 46–0.347μ	Pl. 38–0.391μ	Pl. 32–0.446μ	Pl. 28–0.499μ	Pl. 22–0.614μ	Pl. 19–0.714μ	Pl. 17–0.803μ	Pl. 14–0.977μ	Pl. 11–1.214μ	Pl. 6–1.593μ	Long-method solar constant	Short-method solar constant	Grade
1940															
Jan. 27	5.4	1.476	0.648	0.743	0.833	0.881	0.923	0.956	0.978	0.987	0.990	0.996	1.944	1.944	vg+
Aug. 5	1.3	1.564	.652	.762	.842	.891	.918	.966	.976	.986	.987	.994	53	51	vg+
Dec. 10	5.5	1.473	.645	.740	.843	.876	.907	.970	.978	.983	.984	.989	58	45	vg+
1941															
June 26	1.9	1.543	(.660)	(.760)	(.850)	.905	.922	.968	.977	.980	.983	.989	54	52	vg
Oct. 3	3.8	1.508	.626	.744	.836	.881	.919	.961	.975	.979	.980	.986	58	55	vg+
Dec. 8	4.4	1.491	.631	.751	.838	.884	.926	.963	.975	.983	.985	.989	45	45	vg+
1942															
Feb. 23	10.1	1.409	.611	.736	.833	.874	.916	.958	.971	.980	.981	.984	40	43	e—
Mar. 20	4.3	1.476	.626	.744	.832	.882	.919	.963	.973	.982	.984	.988	33	35	e—
Apr. 18	2.0	1.540	.641	.752	.847	.888	.921	.966	.977	.983	.984	.989	44	43	e—
June 11	1.4	1.554	.636	.755	.836	.889	.926	.963	.973	.983	.991	.993	43	40	e—
18	1.6	1.544	.634	.751	.832	.892	.924	.970	.976	.984	.987	.993	40	44	e—
July 20	1.4	1.549	.633	.753	.839	.890	.922	.966	.976	.990	.987	.993	41	42	e—
Sept. 7	1.0	1.567	.641	.753	.839	.899	.921	.967	.977	.984	.986	.993	43	43	e—
Oct. 16	3.0	1.499	.636	.746	.839	.884	.918	.963	.973	.986	.984	.993	39	38	e—
Dec. 29	7.8	1.433	.621	.734	.835	.872	.908	.957	.969	.978	.976	.985	47	46	vg+
1943															
Mar. 10	6.0	1.456	.622	.750	.833	.876	.917	.957	.968	.976	.973	.983	54	52	vg+
Apr. 7	3.2	1.510	.658	.759	.848	.891	.924	.967	.977	.984	.983	.989	43	44	e—
13	4.2	1.501	.631	.748	.833	.883	.924	.962	.974	.984	.986	.995	43	41	e—
May 5	3.8	1.504	.633	.753	.856	.888	.927	.967	.975	.985	.985	.994	43	44	vg+
13	0.9	1.573	.648	.755	.843	.889	.929	.967	.976	.984	.986	.989	45	48	e—
July 10	0.6	1.593	.637	.757	.851	.888	.923	.967	.975	.985	.988	.995	53	53	e—
Aug. 12	0.3	1.541	.642	.757	.843	.890	.923	.966	.977	.987	.987	.994	47	54	e—
1944															
Mar. 19	6.5	1.451	.627	.745	.833	.882	.918	.960	.970	.981	.980	.985	39	35	e—
May 29	1.7	1.520	.654	.762	.844	.893	.927	.969	.980	.989	.984	.988	39	42	e—
June 25	1.2	1.559	.646	.762	.857	.892	.924	.965	.976	.987	.984	.991	45	43	vg+
1945															
Feb. 2	8.8	1.419	.628	.743	.827	.877	.913	.953	.970	.978	.980	.985	41	49	e
19	13.5	1.407	.618	.738	.828	.877	.914	.955	.967	.976	.975	.983	51	57	e—
Mar. 31	6.0	1.463	.639	.745	.833	.885	.920	.961	.973	.982	.981	.988	43	40	e—
May 27	0.9	1.576	.637	.756	.841	.892	.925	.968	.978	.990	.990	.994	50	48	e
June 9	0.9	1.569	.657	.760	.845	.887	.927	.966	.982	.993	.991	.995	40	43	e—
July 12	2.8	1.525	.655	.757	.842	.890	.922	.967	.980	.990	.991	.996	43	43	e
Aug. 11	0.7	1.580	.635	.755	.848	.893	.928	.968	.980	.991	.989	.993	50	47	e—
Oct. 17	2.5	1.523	.647	.757	.843	.892	.923	.967	.978	.990	.991	.995	39	41	e
Nov. 15	3.4	1.492	.637	.751	.834	.882	.921	.961	.975	.983	.985	.988	39	40	e—
1946															
Sept. 5	1.6	1.539	.627	.741	.838	.890	.919	.963	.972	.982	.982	.989	42	47	vg
1947															
Sept. 9	2.7	1.520	.632	.748	.838	.884	.919	.963	.974	.985	.984	.990	45	44	e—
Oct. 16	4.0	1.497	.632	.750	.834	.883	.917	.962	.973	.984	.985	.997	55	49	e—
1948															
Mar. 15	9.3	1.422	.626	.733	.825	.874	.913	.958	.973	.981	.982	.991	38	43	e
Apr. 29	5.3	1.480	.632	.744	.831	.881	.919	.965	.979	.988	.986	.995	42	42	vg+
June 6	2.5	1.523	.650	.748	.834	.881	.922	.960	.973	.984	.983	.990	50	51	e
26	0.9	1.569	.648	.757	.840	.890	.923	.970	.980	.988	.989	.994	42	51	e—
July 19	0.8	1.576	.630	.750	.835	.889	.923	.967	.980	.988	.989	.995	47	52	e
20	0.5	1.594	.648	.752	.837	.888	.925	.967	.978	.988	.986	.997	53	59	e
Sept. 13	2.9	1.516	.632	.745	.833	.882	.918	.962	.977	.986	.982	.992	51	55	e
Oct. 30	0.8	1.564	.637	.743	.839	.879	.915	.960	.975	.984	.986	.992	50	47	e—
Nov. 7	3.1	1.504	.636	.740	.828	.880	.914	.959	.973	.984	.984	.989	53	53	e—

TABLE 6b.—*Long-method days, showing atmospheric transmission for various places and wavelengths, Table Mountain, California, 1940–50*

[Figures in parentheses represent doubtful values]

Date	Precipitable water in mm.	Pyrheliometry at mean solar distance, air mass 2.0	Pl. 46–0.347μ	Pl. 38–0.391μ	Pl. 32–0.446μ	Pl. 28–0.499μ	Pl. 22–0.614μ	Pl. 19–0.722μ	Pl. 17–0.812μ	Pl. 14–0.986μ	Pl. 11–1.225μ	Pl. 6–1.603μ	Long-method solar constant	Short-method solar constant	Grade
1940															
Mar. 22	4.0	1.458	0.615	0.732	0.825	0.875	0.902	0.962	0.976	0.985	0.981	0.993	1.930	1.935	vg+
July 29	5.6	1.463	.618	.738	.830	.880	.919	.969	.979	.986	.987	.992	36	44	vg
Sept. 30	3.2	1.480	(.610)	.725	.823	.873	.913	.964	.977	.985	.982	.993	29	34	vg
1941															
Jan. 31	3.2	1.517	(.610)	.725	.825	.879	.918	.967	.977	.986	.984	.993	33	32	vg+
1942															
June 20	2.5	1.507	.638	.744	.832	.883	.910	.963	.977	.985	.987	.992	45	53	e—
1943															
Jan. 15	3.3	1.494	.639	.741	.832	.878	.917	.968	.979	.993	.991	.997	40	31	e—
Mar. 12	3.7	1.475	.628	.738	.824	.876	.913	.963	.974	.984	.985	.997	36	44	e—
June 25	2.0	1.497	.627	.736	.823	.875	.908	.960	.975	.988	.988	.998	43	45	e—
Oct. 24	4.7	1.477	.635	.741	.834	.883	.922	.966	.982	.993	.994	.997	46	50	vg+
1944															
Jan. 12	1.6	1.527	.645	.744	.832	.884	.922	.959	.981	.986	.986	.997	57	50	e—
1945															
Jan. 4	2.4	1.499	.657	.739	.820	.877	.918	.966	.980	.984	.996	.994	34	35	e—
Sept. 29	3.9	1.479	.642	.744	.833	.879	.914	.967	.975	.986	.987	.991	49	48	vg+
Oct. 20	4.4	1.477	.644	.744	.834	.884	.923	.968	.978	.986	.988	.993	53	51	e
Apr. 16	5.7	1.505	.599	.692	.781	.835	.883	.937	.953	.968	.973	.985	47	51	e—
Aug. 26	2.9	1.508	.644	.751	.836	.881	.924	.969	.978	.988	.986	.994	46	53	e
Sept. 19	5.9	1.444	.641	.752	.830	.882	.918	.966	.977	.985	.986	.996	44	46	e
Oct. 22	7.5	1.446	.642	.736	.827	.881	.921	.966	.976	.984	.986	.996	50	45	e
Nov. 26	8.1	1.456	.631	.741	.839	.886	.926	.968	.980	.988	.988	.997	50	54	e—
Dec. 29	8.2	1.538	.656	.741	.827	.876	.913	.962	.973	.983	.982	.993	63	58	e—
1947															
Jan. 8	3.3	1.497	.650	.746	.834	.884	.924	.969	.982	.991	.985	.996	48	52	e—
Feb. 5	7.6	1.453	.639	.743	.835	.881	.919	.966	.981	.992	.988	.997	46	50	e
19	2.3	1.501	.639	.744	.825	.874	.910	.963	.972	.982	.983	.989	54	50	e—
Mar. 12	2.0	1.495	.631	.732	.825	.873	.909	.961	.973	.982	.980	.989	51	47	e—
29	1.0	1.518	.632	.734	.826	.874	.907	.962	.975	.984	.983	.992	41	35	e
July 24	2.5	1.499	.639	.742	.830	.878	.915	.967	.976	.987	.988	.993	47	45	e
Dec. 27	2.2	1.505	.644	.741	.831	.881	.917	.967	.976	.983	.982	.996	56	57	e—
1948															
Jan. 14	0.7	1.553	.644	.740	.834	.881	.917	.966	.979	.988	.988	.996	50	44	e
Feb. 27	0.7	1.535	.641	.741	.829	.878	.913	.966	.976	.988	.987	.997	45	51	e—
1949															
June 24	5.7	1.421	.633	.726	.815	.862	.903	.953	.967	.976	.980	.987	44	45	e—
Aug. 8	3.4	1.496	.656	.739	.828	.880	.917	.966	.979	.986	.985	.995	46	52	e—
29	1.9	1.517	.646	.740	.831	.875	.921	.967	.977	.987	.987	.996	50	52	vg+
Nov. 22	6.2	1.457	.636	.738	.827	.878	.917	.967	.978	.987	.988	.997	47	42	e—
Dec. 27	2.0	1.516	.631	.743	.832	.881	.914	.967	.977	.984	.985	.996	52	55	e—
1950															
Jan. 26	0.9	1.543	.651	.742	.830	.880	.916	.965	.977	.983	.985	.998	44	47	e—
June 8	1.6	1.494	.627	.732	.822	.868	.902	.956	.969	979	.979	.990	48	47	e—
Aug. 6	3.2	1.488	.639	.741	.831	.879	.914	.964	.978	.988	.986	.993	51	51	e—
Oct. 2	1.3	1.537	.640	.745	.836	.885	.921	.967	.978	.986	.987	.998	45	51	vg+
Dec. 9	3.9	1.495	.654	.743	.832	.883	.919	.966	.976	.985	.987	.995	51	50	e—
17	4.1	1.475	.631	.740	.829	.878	.919	.965	.974	.985	.985	.994	51	53	vg+

Table 6c.—*Long-method days, showing atmospheric transmission for various places and wavelengths, Mount St. Katherine, Egypt, 1934–37*

[Figures in parentheses represent doubtful values]

Date	Precipitable water in mm.	Pyrheliometry at mean solar distance, air mass 2.0	Pl. 46–0.347μ	Pl. 38–0.391μ	Pl. 32–0.446μ	Pl. 28–0.499μ	Pl. 22–0.614μ	Pl. 19–0.705μ	Pl. 17–0.789μ	Pl. 14–0.958μ	Pl. 11–1.189μ	Pl. 6–1.572μ	Long-method solar constant	Short-method solar constant	Grade
1934															
Feb. 28	2.0	1.519	(0.650)	0.745	(0.825)	0.883	0.918	0.962	0.978	0.992	0.991	0.994	1.940	1.945	g
Mar. 8	1.5	1.530	.631	.740	.838	.882	(.916)	.961	.976	.986	.986	.987	42	45	vg
Apr. 21	0.4	1.552	.628	.730	.818	.864	.900	.951	.966	.982	.982	.982	34	31	vg
June 24	1.9	1.516	.631	.745	.834	.883	.916	.964	.976	.985	.986	.991	44	47	vg
July 13	1.8	1.508	.622	.736	.836	.886	.917	.958	.973	.984	.985	.987	38	41	vg+
21	1.4	1.541	.630	.752	.843	.886	.920	.966	.978	.990	.992	.991	36	41	vg+
28	1.9	1.504	.646	.738	.833	.881	.913	.958	.969	.982	.980	.987	53	56	vg
Aug. 17	3.1	1.495	.632	.741	.835	.880	.918	.959	.975	.986	.985	.991	45	49	vg
Oct. 9	2.9	1.485	.637	.736	.831	.879	.916	.961	.975	.986	.989	.992	36	44	vg
Nov. 26	2.6	1.517	(.620)	.740	(.840)	.887	.922	.966	.979	.992	.991	.996	38	42	vg+
1935															
Feb. 6	2.4	1.519	.637	.750	.836	.884	.919	.964	.979	.989	.991	.994	52	49	vg
16	0.5	1.579	(.625)	.744	.834	.876	.917	.959	.975	.987	.985	.990	55	51	vg+
Mar. 7	1.0	1.544	.624	.740	.834	.881	.911	.960	.977	.985	.986	.991	56	52	vg
Apr. 1	1.0	1.543	.625	.744	.837	.878	.917	.959	.975	.986	.986	.989	46	45	vg
5	0.8	1.552	.630	.746	.835	.884	.917	.962	.975	.985	.985	.990	46	50	vg
12	0.7	1.541	.620	.740	.832	.875	.909	.956	.972	.980	.984	.988	51	51	vg
14	1.0	1.539	.619	.741	.833	.878	.909	.957	.975	.985	.986	.991	48	50	vg
June 13	3.8	1.471	.640	.748	.838	.883	.918	.955	.974	.981	.979	.986	48	52	vg
18	3.2	1.473	.621	.738	.835	.878	.914	.960	.974	.986	.986	.990	47	51	vg
July 8	3.6	1.474	.634	.744	.840	.883	.919	.962	.975	.986	.986	.988	47	47	vg
1936															
Jan. 21	0.8	1.558	.650	.745	.839	.881	.920	.962	.975	.988	.990	.989	44	46	vg+
May 21	1.0	1.517	.619	.730	.820	.868	.900	.950	.967	.977	.980	.984	44	41	e—
July 4	1.5	1.535	.621	.746	.835	.882	.917	.963	.976	.985	.986	.988	49	51	e—
8	1.7	1.526	.638	.749	.835	.886	.920	.965	.978	.986	.986	.985	46	48	e
16	2.7	1.493	.645	.746	.831	.882	.918	.961	.974	.986	.987	.986	50	51	vg+
29	3.9	1.473	.618	.741	.835	.883	.921	.962	.975	.985	.984	.986	49	47	vg+
Aug. 5	3.0	1.480	.621	.743	.826	.879	.916	.960	.972	.983	.985	.985	47	48	vg+
Sept. 12	2.4	1.507	.631	.746	.836	.884	.923	.962	.974	.985	.985	.987	50	54	e—
21	1.7	1.530	.647	.746	.841	.887	.924	.965	.978	.985	.985	.991	48	45	e—
Oct. 7	2.4	1.517	.634	.746	.838	.885	.921	.964	.976	.982	.984	.989	55	52	e
19	6.0	1.419	.615	.735	.821	.867	.903	.945	.959	.970	.971	.982	55	48	e—
Nov. 1	5.9	1.452	.620	.741	.831	.865	.913	.951	.966	.976	.977	.987	54	58	vg+
1937															
Jan. 21	1.1	1.543	.643	.752	.841	.884	.914	.955	.975	.982	.984	.990	43	39	e—
Feb. 2	1.1	1.550	.650	.755	.835	.886	.924	.962	.976	.984	.985	.990	41	36	e—
14	0.9	1.555	.636	.749	.837	.883	.917	.960	.975	.983	.986	.991	47	48	e
Mar. 6	0.6	1.563	.640	.755	.837	.883	.914	.961	.975	.985	.986	.990	40	38	e
13	1.2	1.541	.646	.750	.839	.883	.913	.961	.974	.985	.986	.993	42	45	e
July 17	5.2	1.445	.627	.744	.836	.884	.919	.955	.973	.980	.981	.989	51	46	vg
Aug. 11	3.7	1.490	.635	.751	.835	.885	.921	.962	.974	.981	.982	.988	45	46	e—
Sept. 18	2.3	1.502	.634	.751	.836	.882	.917	.956	.968	.978	.980	.982	54	51	e—

TABLE 6d.—*Long-method days, showing atmospheric transmission for various places and wavelengths, Tyrone, New Mexico, 1940–45*

[Figures in parentheses represent doubtful values]

Date		Precipitable water in mm.	Pyrheliometry at mean solar distance, air mass 2.0	Pl. 46– 0.347μ	Pl. 38– 0.391μ	Pl. 32– 0.446μ	Pl. 28– 0.499μ	Pl. 22– 0.614μ	Pl. 19– 0.705μ	Pl. 17– 0.789μ	Pl. 14– 0.958μ	Pl. 11– 1.189μ	Pl. 6– 1.572μ	Long-method solar constant	Short-method solar constant	Grade
1940																
Feb.	13	2.1	1.533	0.628	0.744	0.832	0.881	0.911	0.963	0.976	0.986	0.983	0.990	1.951	1.951	vg+
	18	1.1	1.545	.656	.747	.832	.883	.918	.958	.975	.984	.984	.988	42	47	e
Mar.	12	1.0	1.550	.653	.744	.833	.882	.905	.961	.975	.983	.982	.990	53	50	e—
	16	2.5	1.501	.659	.741	.832	.882	.913	.958	.973	.983	.987	.989	36	43	vg+
Apr.	29	7.0	1.443	.623	.732	.825	.874	.908	.953	.968	.979	.981	.983	59	65	e
May	7	4.7	1.460	.631	.744	.831	.877	.910	.956	.971	.981	.979	.986	41	48	e
Oct.	24	9.2	1.390	.614	.712	.801	.858	.906	.946	.956	.976	.983	.986	42	46	vg
	29	5.2	1.522	.636	.744	.834	.883	.916	.961	.976	.988	.986	.986	49	51	e—
Nov.	2	6.0	1.470	.631	.732	.830	.879	.917	.963	.976	.986	.985	.992	48	52	e
Dec.	7	3.7	1.500	.648	.735	.830	.885	.921	.964	.980	.986	.984	.993	47	49	e—
	8	2.5	1.524	.627	.742	.832	.886	.924	.966	.977	.987	.988	.995	55	54	e
	20	2.4	1.521	.631	.738	.832	.883	.921	.966	.977	.984	.983	.989	47	51	e
	26	2.6	1.514	.632	.742	.829	.883	.921	.963	.972	.986	.985	.992	56	59	e—
1941																
Jan.	18	3.9	1.500	.629	.742	.835	.883	.923	.964	.977	.986	.986	.992	53	53	e
	19	3.7	1.508	.622	.741	.834	.886	.923	.962	.976	.986	.986	.993	67	61	e
	21	2.1	1.531	.622	.742	.834	.879	.921	.962	.975	.984	.983	.991	56	51	e—
Mar.	8	0.8	1.554	.627	.736	.827	.878	.915	.962	.977	.986	.985	.994	43	43	e—
May	6	6.3	1.457	.632	.744	.828	.888	.917	.960	.975	.985	.986	.993	45	45	e
July	2	9.6	1.416	.635	.735	.825	.870	.907	.954	.971	.980	.980	.984	51	53	e—
Nov.	5	7.2	1.453	.622	.735	.832	.878	.919	.963	.975	.987	.986	.995	51	49	vg—
	23	0.9	1.557	.644	.728	.824	.874	.912	.953	.970	.982	.993	.994	51	47	vg—
Jan.	8	5.8	1.480	.638	.742	.840	.884	.922	.965	.978	.987	.986	.990	52	55	vg—
June	5	4.5	1.441	.620	.728	.819	.871	.901	.945	.963	.972	.973	.982	50	51	vg+
	12	4.4	1.469	(.630)	.745	.834	.883	.919	.958	.972	.981	.985	.988	40	41	vg+
Nov.	23	5.6	1.477	.632	.745	.833	.879	.917	.952	.976	.988	.988	.994	51	46	vg
1943																
Apr.	12	4.6	1.423	.611	.726	.813	.862	.895	.943	.960	.972	.972	.981	44	44	vg
Oct.	21	3.0	1.500	.622	.746	.832	.884	.923	.959	.975	.986	.986	.985	40	44	e—
Dec.	15	3.6	1.502	.641	.740	.834	.884	.924	.966	.976	.984	.984	.989	50	49	e—
1944																
Dec.	7	2.9	1.511	.660	.742	.830	.878	.915	.963	.976	.985	.986	.987	50	48	e
1945																
Feb.	26	1.2	1.496	.614	.727	.819	.866	.904	.954	.967	.982	.980	.987	28	27	e—

TABLE 6e.—*Long-method days, showing atmospheric transmission for various places and wavelengths, Miami, Florida, 1948*

Date		Precipitable water in mm.	Pyrheliometry at mean solar distance, air mass 2.0	Pl. 46– 0.347μ	Pl. 38– 0.391μ	Pl. 32– 0.446μ	Pl. 28– 0.499μ	Pl. 22– 0.614μ	Pl. 19– 0.705μ	Pl. 17– 0.789μ	Pl. 14– 0.958μ	Pl. 11– 1.189μ	Pl. 6– 1.572μ	Long-method solar constant	Grade
1948															
Jan.	15	3.1	1.389	0.525	0.640	0.751	0.813	0.888	0.943	0.954	0.973	0.972	0.985	1.954	f
Feb.	1	10.1	1.286	.513	.644	.742	.838	.880	.926	.939	.962	.963	.973	48	f
	6	32.1	1.202	.564	.652	.748	.800	.873	.919	.935	.949	.952	.957	44	f
	23	25.7	1.152	.470	.636	.715	.747	.824	.892	.927	.941	.950	.955	56	f
	29	33.0	1.150	.536	.603	.718	.774	.834	.885	.906	.916	.917	.926	86	p
Mar.	10	34.7	1.159	.561	.620	.734	.791	.851	.897	.911	.926	.927	.933	45	p
Apr.	17	35.5	1.102	.459	.575	.679	.755	.823	.881	.909	.932	.941	.953	50	f
May	3	36.3	1.100	.465	.562	.694	.750	.796	.874	.906	.920	.925	.942	96	p
	5	31.1	1.161	.518	.631	.724	.789	.835	.899	.918	.930	.933	.940	68	f
June	11	41.4	.987	.382	.530	.607	.687	.715	.850	.885	.920	.935	.949	42	p

CHAPTER 4

Pyrheliometry

Standard pyrheliometer

A basic requirement of the solar-constant program was the development of a reliable standard pyrheliometer for determining the total solar radiation which falls upon a unit area normal to the radiation. The Smithsonian standard instrument designed by Abbot[4] embodies a "black-body" absorbing chamber. This chamber, by virtue of its form, is such that all entering radiation is trapped and repeatedly reflected by the inner walls until it is completely absorbed.

Abbot's "black-body" is cylindrical in shape with a diaphragmed aperture and a blackened hollow cone at the extreme end. The walls of the cavity are thin and are continually bathed by flowing water. Thus the heat produced in the walls by the absorption of solar radiation is quickly transferred to the flowing water. The water temperature is measured before entering and immediately after leaving the walls. Knowing the area of the aperture, the rate of flow, and the rise in temperature of the water, the calories of heat produced by the radiation are directly computed.

To verify the correctness of his standard pyrheliometer, Abbot placed within the "black-body" chamber two coils of insulated wire of known resistance. One was in the extreme back wall of the chamber where it was more favorably situated than solar heating to convey electrically produced heat to the flowing water. The other coil was placed unfavorably to give up its heat to the flowing water, being attached with shellac to the front rim of the hollow cone. A long series of tests with each of the coils showed no difference in results and the mean of all the tests indicated the complete recovery of the electrically produced heat within 1 part in 500. In the years 1910–13 a careful campaign of intercomparisons between silver-disk pyrheliometers and three independent copies of the standard instrument led to the adoption of what we called "the Smithsonian revised pyrheliometric scale of 1913." This has remained the Smithsonian standard ever since, even though subsequent improvements have shown, as will be indicated below, that the 1913 scale is 2.5 percent too high.

Following a suggestion by W. M. Shulgin (Mon. Weath. Review, vol. 55, No. 8, p. 361, Aug. 1927), Dr. Abbot in 1932 adopted an alteration to the water-flow standard which simplified its use and increased its accuracy. The alteration provides two identical, black-body chambers side by side and divides the flow of water equally between them (see fig. 4 and plate 4). This accomplishes two things, (1) it eliminates irregular galvanometer drift, and (2) it permits the use of Ångström's ingenious electrical compensation method. It is no longer necessary to measure the rate of water flow or the rise of temperature of the water. Instead, we balance solar heat in one chamber against electrical heat in the other and repeatedly reverse the kind of heating in the two chambers. The improved instrument responds quickly to small changes in heating.

In June and July 1932 Dr. C. G. Abbot and Mr. L. B. Aldrich compared silver-disk pyrheliometer S.I. 5 with this improved form of the water-flow pyrheliometer.[5]

The mean of 37 comparisons indicated the constant of S.I. 5 should be .3625. The original constant of S.I. 5 (.3715) was determined by Messrs. Abbot and Hoover in August 1931 by 24 comparisons with A.P.O. 8_{bis}. Eight more comparisons in September 1932 by Messrs. Aldrich and Hoover indicated the constant of S.I. 5 should be .3718. Silver-disk pyrheliometer A.P.O. 8_{bis} has been used since 1912 solely for standardization at Washington. Thus the scale of the Smithsonian revised scale of 1913 is too high by the ratio .3718 to .3625, or 1.0256; about 2.5 percent.

The result of 42 more comparisons in July 1934 by the same observers was in close agreement with the results of 1932. The mean value of the constant of S.I. 5 was .3625 in 1932 and .3629 in 1934.[6]

No comparisons were made between 1934 and 1947. In August 1947, 18 comparisons gave .3626 as the constant of S.I. 5.[7] The results of the comparisons between silver-disk pyrheliometer S.I. 5 and the standard water-flow pyrheliometer No. 5 in 1932, 1934, and 1947 are based on Dr. C. G. Abbot's habit of reading the silver-disk pyrheliometer. Mr. L. B. Aldrich made a few observations with S.I. 5 in 1932.

Since there is a small personal equation in reading the silver-disk pyrheliometer, more comparisons were made in 1952 between S.I. 5 and the standard water-flow instrument No. 5. The results of 1952 are based on Mr. A. G. Froiland's habit of reading the silver-disk pyrheliometer. In order to insure comparable results with the water-flow pyrheliometer no changes were made in the instrument.

Figure 4 shows the instrument in some detail. The two chambers *a b c* and *a′ b′ c′* are almost exactly the same in all details; the distilled water enters at *d* and divides into two streams at *e* and *e′*; the water flows around the receiver at *d* and *d′* and out of the instrument at *j* and *j′*; *i* and *i′* are the thermoelectric junctions used to determine the equality of temperature of the water streams outflowing from the two chambers; *m* is the water bath for the two receivers, water entering at *p* and discharging at *o*; *n* is a wooden case surrounding the instrument. The heating coils are indicated by *k* and *k′*. Not shown is a shutter for alternating the chambers exposed to solar and electric heating. A detailed description of one of the receivers is given on page 53 of volume 3 of the Annals of the Astrophysical Observatory.

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[4] See Ann. Astrophys. Obs., vol. 2, pp. 39–47, 1908; vol. 3, pp. 52–54, 1913.

[5] Smithsonian Misc. Coll., vol. 87, No. 15, 1932.

[6] Smithsonian Misc. Coll., vol. 92, No. 13, 1934.

[7] Smithsonian Misc. Coll., vol. 110, No. 5, 1948.

In order to keep the water bath surrounding the two receivers and the distilled water entering the instrument at the same temperature, we used a 50-gallon drum as a source of water for the water bath. A circulating pump continually stirred the water in the drum and a by-pass on the pump circulated some of the water through the water bath. The distilled water flowed through a coil in the drum before entering the instrument. Thus the bath water and the distilled water were always at the same temperature when leaving the drum.

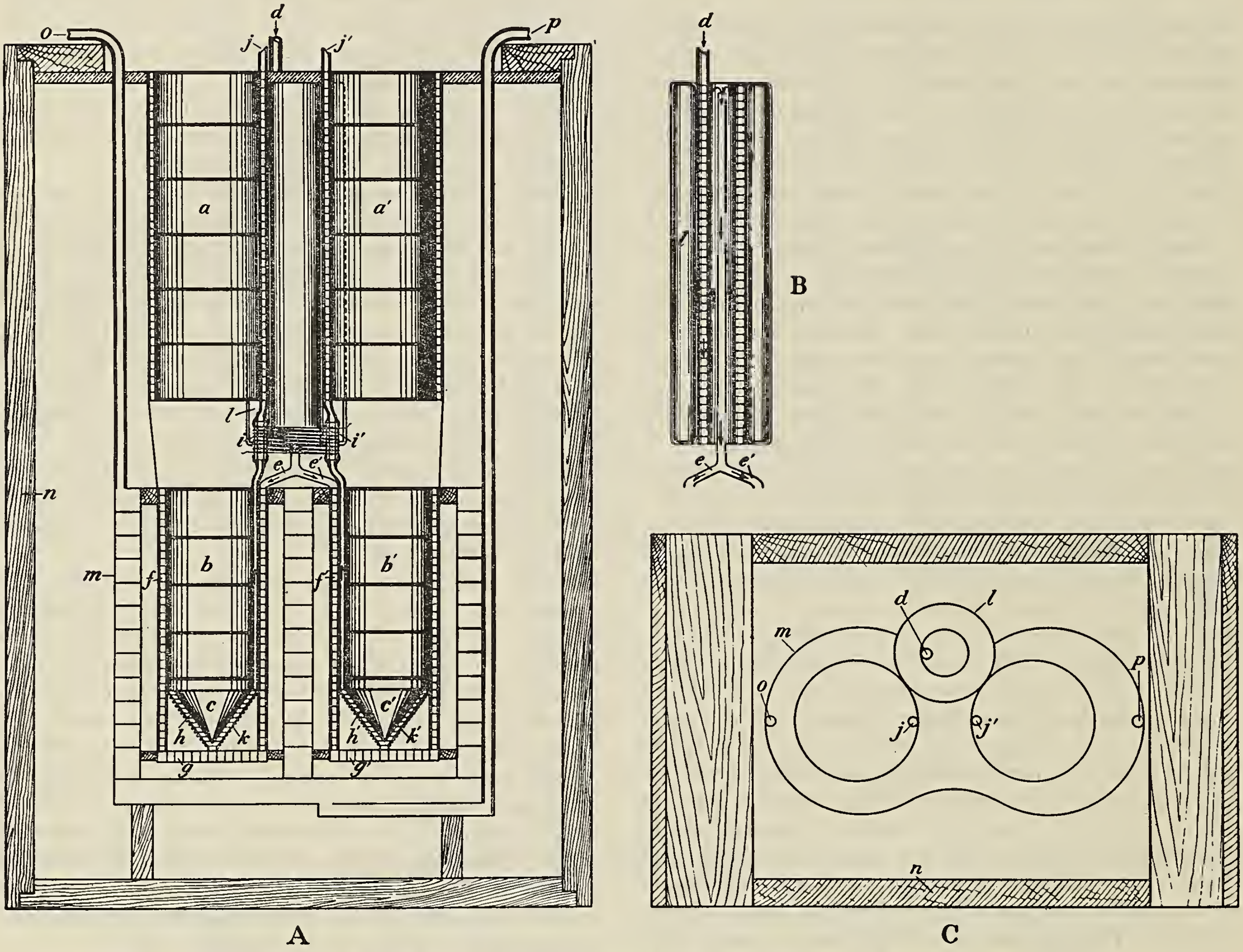

Figure 4.—Cross-sectional diagram of standard water-flow pyrheliometer. (For explanation, see text.)

All the precautions which were taken in 1932, 1934, and 1937 to insure greater accuracy were again taken in the present comparisons. In addition, we found it very important to have the rate of flow of water in the two receivers as near the same as possible. The water entering the receivers may not be at exactly the same temperature as the water bath around the receivers, thus any change in the temperature difference would produce a drift of the galvanometer.

In order to get the flow of water the same in the two circuits, we exposed both receivers to solar radiation and adjusted the flow of water until the galvanometer remained at the open circuit zero. Thus the two streams of water were at the same temperature and since they were both receiving the same amount of heat the rate of flow should be the same.

Water currents of approximately 50 cc. per minute in each branch of the pyrheliometer were found to give good results, but rates as low as 35 cc. and as high as 65 cc. per minute were used without affecting the results. Temperature of the water bath varied from 23° C. to 28° C. on different days.

Table 7 gives the results of the comparisons. The mean of 100 observations gives .3622 as the constant of S.I. 5. The average deviation from the mean is .00097 and the maximum deviation from the mean about .9 percent. The above value is about .13 percent lower than the mean of the previous values.

Figure 5 is a photographic copy of Mr. A. G. Froiland's

TABLE 7.—*Summary of 1952 comparisons of the standard pyrheliometer versus the silver-disk pyrheliometer*

Date	Time	Water flow No. 5 ly/min.	Silver-disk S.I. 5		Deviation from mean
			Corrected reading	Constant	
Sept. 28	8:38	1.368	3.775	.3624	+2
	44	1.376	3.790	.3630	+8
	50	1.380	3.796	.3636	+14
	56	1.388	3.847	.3609	—13
	9:05	1.400	3.877	.3611	—11
	11	1.411	3.889	.3627	+5
	17	1.413	3.895	.3628	+6
	23	1.412	3.906	.3616	—6
	29	1.418	3.931	.3608	—14
	35	1.428	3.951	.3614	—8
29	9:22	1.405	3.861	.3638	+16
	28	1.410	3.879	.3638	+16
	34	1.407	3.894	.3613	—9
	40	1.408	3.899	.3612	—10
	46	1.415	3.918	.3611	—11
	52	1.419	3.937	.3604	—18
	58	1.425	3.947	.3609	—13
	10:04	1.434	3.944	.3635	+13
	10	1.445	3.975	.3635	+13
	11:14	1.447	3.986	.3630	+8
	20	1.454	4.018	.3620	—2
	26	1.462	4.015	.3641	+19
	32	1.461	4.011	.3642	+20
	38	1.458	4.022	.3624	+2
	44	1.466	4.027	.3640	+18
	50	1.454	3.996	.3639	+17
	56	1.464	4.025	.3637	+15
	12:02	1.454	4.005	.3629	+7
	08	1.464	4.013	.3649	+27
	14	1.457	4.004	.3639	+17
30	9:44	1.423	3,922	.3628	+6
	50	1.421	3.930	.3617	—5
	56	1.430	3.961	.3610	—12
	10:02	1.431	3.949	.3624	+2
	08	1.426	3.945	.3613	—9
	14	1.430	3.959	.3611	—11
	20	1.433	3.990	.3591	—31
	26	1.446	3.988	.3626	+4
	32	1.438	3.998	.3596	—28
	38	1.454	4.013	.3623	+1
Oct. 1	11:11	1.446	3.990	.3625	+3
	17	1.453	4.027	.3607	—15
	23	1.458	4.029	.3620	—2
	29	1.458	4.020	.3628	+6
	35	1.458	4.029	.3619	—3
	41	1.457	4.008	.3635	+13
	47	1.454	4.018	.3617	—5
	53	1.469	4.058	.3621	—1
	59	1.472	4.058	.3627	+5
Oct. 1	12:05	1.472	4.067	.3621	—1
	13	1.463	4.054	.3610	—12
	19	1.458	4.023	.3623	+1
	25	1.461	4.048	.3609	—13
	31	1.465	4.037	.3628	+6
	37	1.447	3.994	.3623	+1
	43	1.451	4.007	.3621	—1
	49	1.445	3.980	.3631	+9
	55	1.427	3.947	.3616	—6
	1:01	1.418	3.878	.3657	+35
	07	1.427	3.918	.3642	+20
9	8:17	1.447	3.971	.3644	+22
	23	1.450	3.995	.3630	+8
	29	1.463	4.050	.3613	—9
	35	1.465	4.053	.3614	—8
	41	1.478	4.065	.3635	+13
	47	1.479	4.087	.3619	—3
	53	1.494	4.123	.3623	+1
	59	1.492	4.119	.3623	+1
	9:05	1.496	4.150	.3604	—18
	11	1.506	4.166	.3616	—6
	39	1.516	4.196	.3612	—10
	45	1.526	4.235	.3604	—18
	51	1.530	4.242	.3607	—15
	57	1.534	4.245	.3615	—7
	10:03	1.543	4.265	.3617	—5
	09	1.550	4.276	.3625	+3
	15	1.548	4.276	.3620	—2
	21	1.549	4.276	.3623	+1
	27	1.551	4.291	.3614	—8
	33	1.548	4.291	.3607	—15
	11:03	1.554	4.290	.3623	+1
	09	1.557	4.305	.3616	—6
	15	1.558	4.311	.3613	—9
	21	1.558	4.311	.3614	—8
	27	1.558	4.311	.3613	—9
	33	1.548	4.291	.3607	—15
	39	1.553	4.297	.3614	—8
	45	1.546	4.277	.3615	—7
	51	1.546	4.296	.3599	—23
	12:04	1.540	4.241	.3632	+10
11	9:48	1.530	4.224	.3622	0
	54	1.535	4.226	.3632	+10
	10:00	1.537	4.218	.3645	+23
	06	1.541	4.240	.3635	+13
	12	1.545	4.250	.3636	+14
	18	1.549	4.276	.3623	+1
	24	1.548	4.276	.3619	—3
	30	1.539	4.241	.3630	+8
	36	1.540	4.251	.3622	0
	42	1.543	4.261	.3621	—1

Mean of 100 observations (6 days) .3622
Average deviation .00097

original readings of the silver-disk pyrheliometer S.I. 5 on September 29, 1952.

A summary of all the comparisons between S.I. 5 and standard water-flow No. 5 is given below:

No. of values	Date	Mean constant S.I. 5
37	1932	.3625
42	1934	.3629
18	1947	.3626
100	1952	.3622

The variations in these results are probably within the limit of error of the observations, thus we may assume the constant of S.I. 5 has remained constant since 1932.

The constant of S.I. 5 as determined by 32 comparisons with the standard silver-disk pyrheliometer A.P.O. 8_{bis} in 1931 and 1932 was .3718. The mean of 64 comparisons with A.P.O. 8_{bis} just before S.I. 5 was carried to Table Mountain, Calif., and 64 comparisons just after its return to Washington gave the same constant. The mean of all good comparisons between S.I. 5 and A.P.O. 8_{bis} from 1931 to 1953 gives .3719 as the constant of S.I. 5. This would indicate that A.P.O. 8_{bis} has remained unchanged since 1932.

The mean of all the above results would indicate the scale of Smithsonian revised pyrheliometry of 1913 is very nearly 2.5 percent too high.

Silver-disk pyrheliometer

The standard water-flow pyrheliometer requires auxiliary equipment and considerable care in manipulation. Hence, for day-to-day use the comparatively simple silver-disk pyrheliometer is given preference. This instrument,[8] also designed and developed by Abbot, has shown remarkable constancy over many years. In its present form it consists of a blackened silver disk 28 mm. in diameter and 7 mm. thick. This disk lies flat side up at the bottom of a brass tube, 37 cm. long, through which the solar rays pass. A thermometer bulb is inserted radially in a hole in the disk. The observer measures the rate of rise in the thermometer reading as the sun heats the blackened disk.

The silver-disk pyrheliometer is a secondary instrument whose constant is determined by comparisons with a standard pyrheliometer. The Smithsonian Institution has now built and calibrated over 100 silver-disk pyrheliometers. There are 36 in Europe, 28 in North America, 15 in South America, 6 in Asia, 9 in or near Australia, and 9 in Africa; thus, the Smithsonian scale of radiation is available in all parts of the world.

At Washington we have kept two silver-disk pyrheliometers, A.P.O. 8_{bis} and S.I. 5, as substandards. These two instruments have repeatedly been compared with the Smithsonian water-flow standard and with other pyrheliometers and pyranometers. In 40 years of use we have found practically no evidence of a change in either instrument.[9]

When used in accordance with the precautions discussed later in this chapter, the silver-disk pyrheliometer is a simple, rugged, accurate, and reliably constant instrument.

In the following series of experiments with the silver-disk pyrheliometer the source of radiation was a 100-watt microscope lamp. An enlarged image of the filament was focused on the silver disk by means of a lens and the voltage on the lamp maintained constant with a voltage regulator. Silver-disk pyrheliometer S.I. 5 was used in most of the tests.

One correction applied to the reading of the silver-disk pyrheliometer depends upon the mean bulb temperature while exposed to radiation. The correction is $[K(T-30^\circ)]R$ where T is the mean bulb temperature, R the rise in temperature in 100 seconds plus the cooling corrections, and K is a constant. The value of K in use is .0011. This value was determined experimentally using two silver-disk pyrheliometers.[10] The determination here described was made with one pyrheliometer.

In this experiment and all the following experiments the lamp was turned on about an hour before making a series of readings. The lamp was very constant during a day's observations and changed very little from day to day.

In one set of observations the mean of 18 observations at a mean bulb temperature of 34.21° was 3.388 and a mean of 12 observations at a mean bulb temperature of 21.66° was 3.435. The above readings represent the rise in temperature of the silver disk with all corrections applied with the exception of the one depending on the mean bulb temperature. If this correction is applied the two values should be the same. Thus $3.388+[4.21\ K\ (3.388)]=3.435+[-8.34\ K\ (3.435)]$ or $K=.001095$. Other determinations of K with different temperature differences gave results of K between .00104 and .00118, with a mean value approximately .0011. One set of observations made with pyrheliometer S.I. 89 gave .00109. Some of the determinations of K were made with the pyrheliometer in a water-cooled chamber with a hole in one end to admit the radiation and a slot along one side to read the thermometer. Also an automatic, shutter-opening-and-closing device was used for some of the work. In any set of observations individual values were within ±.3 percent of the mean.

In making a series of readings it has been our practice to start readings 20 seconds after completing an observation. Thus a 4-minute shaded period occurs between each 2 minutes of exposure. Each value is independent and the total rise in temperature of the silver disk is much less than the rise in temperature of the silver disk with only a 2-minute shaded period between the 2-minute exposures.

In the following experiment, sets of six readings each were taken and for each set the cooling correction for the first 100 seconds of the first reading was zero or near zero. Sets of readings were made at different temperatures and some were made with the automatic shutter-opening-and-closing device. After the fifth reading the mean bulb temperature and the cooling correction remained about constant. The mean of 30 sets is given below:

No. of reading	1	2	3	4	5	6
Corrected reading	3.202	3.206	3.208	3.210	3.211	3.212

The above indicates some increase in the reading from 1 to 6. The change is small, however, after the second reading. This fact was noted about 20 years ago when many comparisons were being made between the silver-disk and the Ångström pyrheliometers. Since that time, when using the silver-disk pyrheliometer we have preheated the silver disk from 1 to 3 minutes before starting a series of readings. Series of readings taken after the silver disk was preheated gave very consistent readings. Some of the discrepancy in the readings shown above may be due to a delay in opening and closing the shutter or a time lag in reading the thermometer. The rate of movement of the mercury thread is different in the first two or three readings of a set from that

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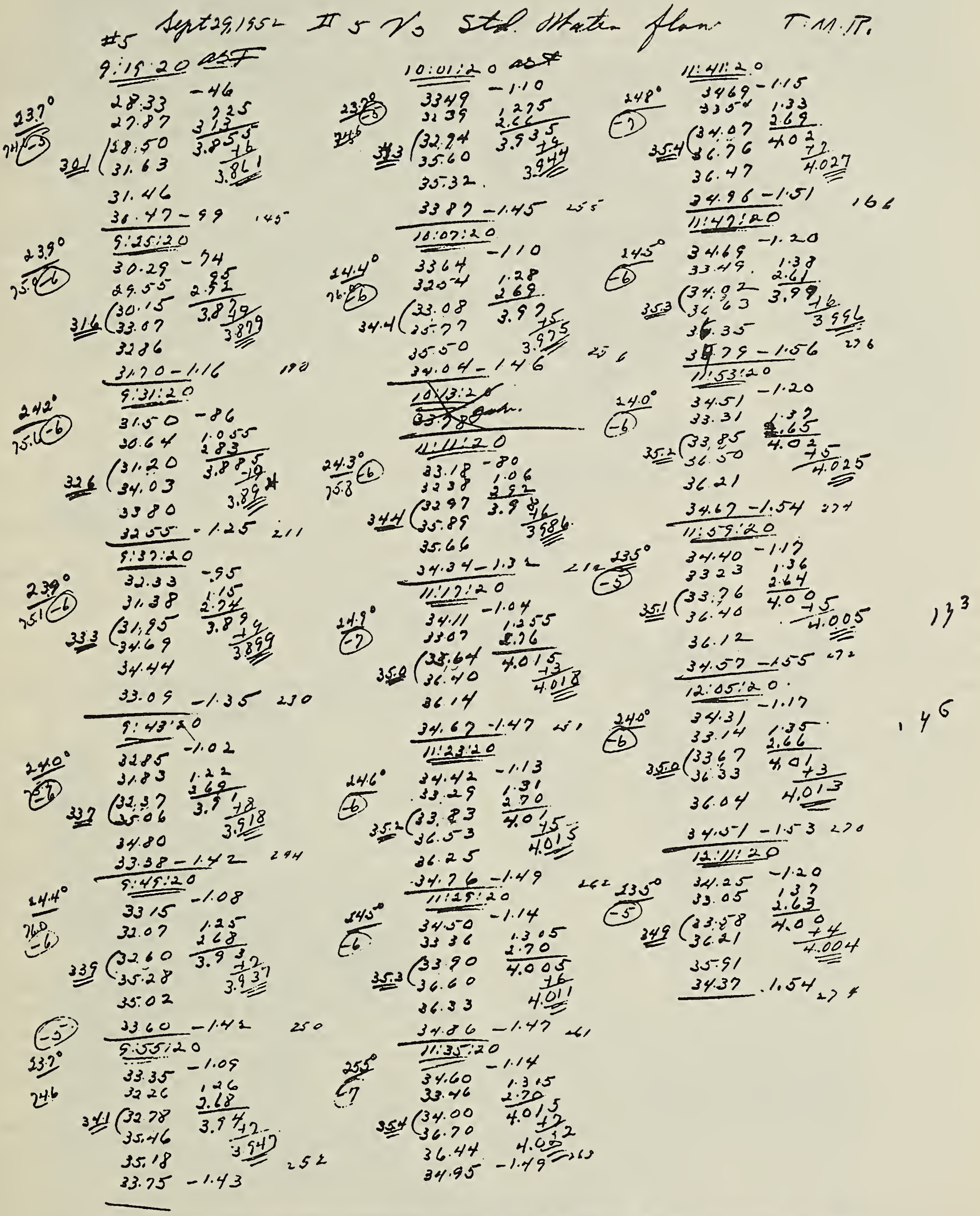
[8] Ann. Astrophys. Obs., vol. 6, p. 44, 1942.

[9] Quite independent evidence concerning the constancy of the silver-disk pyrheliometer is given by E. Chaudet (Bull. Amer. Meteor. Soc., vol. 25, No. 5, p. 189, 1944). He points out that in 18,000 observations extending over 30 years he found no deviation in scale as great as 1 percent.

[10] Smithsonian Misc. Coll., vol. 95, No. 23, 1937.



#5 Sept 29, 1952 II 5 Vo Std. Water flow T.M.P.

9:19:20 ~~AST~~
23.7°
74 (-5)
28.33 -46
27.87 .925
301 (28.50 3.13
31.63 3.855
31.46 +6
31.47 -99 3.861
145

9:25:20
23.9°
75.0 (-6)
30.29 -74
29.55 .95
316 (30.15 2.92
33.07 3.879
32.86 0
31.70 -1.16 3.879
190

9:31:20
24.2°
75.1 (-6)
31.50 -86
30.64 1.055
326 (31.20 2.83
34.03 3.885
33.80 +10
32.55 -1.25 3.895
211

9:37:20
23.9°
75.1 (-6)
32.33 -.95
31.38 1.15
333 (31.95 2.74
34.69 3.89
34.44 +9
33.09 -1.35 3.899
230

9:43:20
24.0°
(-6)
-1.02
32.85
31.83 1.22
337 (32.37 2.69
35.06 3.91
34.80 +8
33.38 -1.42 3.918
244

9:49:20
24.4°
76.0 (-6)
33.15 -1.08
32.07 1.25
339 (32.60 2.68
35.28 3.93
35.02 +7
33.60 -1.42 3.937
250

9:55:20
(-5)
23.7°
24.6
33.35 -1.09
32.26 1.26
341 (32.78 2.68
35.46 3.94
35.18 +7
33.75 -1.43 3.947
252

10:01:20 ~~AST~~
23.2° (-5)
74.6
33.49 -1.10
32.39 1.275
343 (32.94 2.66
35.60 3.935
35.32 +9
33.87 -1.45 3.944
255

10:07:20
24.4°
76.0 (-6)
-1.10
33.64
32.04 1.28
344 (33.08 2.69
35.77 3.97
35.50 +5
34.04 -1.46 3.975
256

~~10:13:20~~
~~33.78~~ ~~[illegible]~~

11:11:20
24.3° (-6)
75.8
33.18 -80
32.38 1.06
344 (32.97 2.92
35.89 3.98
35.66 +6
34.34 -1.32 3.986
212

11:17:20
24.9°
(-7)
-1.04
34.11 1.255
33.07 2.76
350 (33.64 4.015
36.40 +3
36.14 4.018
34.67 -1.47
251

11:23:20
24.6°
(-6)
34.42 -1.13
33.29 1.31
352 (33.83 2.70
36.53 4.01
36.25 +5
34.76 -1.49 4.015
262

11:29:20
24.5°
(-6)
-1.14
34.50
33.36 1.305
353 (33.90 2.70
36.60 4.005
36.33 +6
34.86 -1.47 4.011
261

11:35:20
25.5°
(-7)
-1.14
34.60 1.315
33.46 2.70
354 (34.00 4.015
36.70 +7
36.44 4.022
34.95 -1.49
263

11:41:20
24.8°
(-7)
34.69 -1.15
33.54 1.33
354 (34.07 2.69
36.76 4.02
36.47 +7
34.96 -1.51 4.027
266

11:47:20
24.5°
(-6)
-1.20
34.69
33.49 1.38
353 (34.02 2.61
36.63 3.99
36.35 +6
34.79 -1.56 3.996
276

11:53:20
24.0°
(-6)
34.51 -1.20
33.31 1.37
352 (33.85 2.65
36.50 4.02
36.21 +5
34.67 -1.54 4.025
274

11:59:20
23.5°
(-5)
34.40 -1.17
33.23 1.36
351 (33.76 2.64
36.40 4.00
36.12 +5
34.57 -1.55 4.005
272

12:05:20
24.0°
(-6)
-1.17
34.31 1.35
33.14 2.66
350 (33.67 4.01
36.33 +3
36.04 4.013
34.51 -1.53
270

12:11:20
23.5°
(-5)
34.25 -1.20
33.05 1.37
349 (33.58 2.63
36.21 4.00
35.91 +4
34.37 -1.54 4.004
274

13³

1 4⁶

FIGURE 5.—Silver-disk pyrheliometer readings, Table Mountain, Calif., September 29, 1952.

in later readings when the rates of heating and cooling remain about constant.

To determine the effect of delay in opening and closing the shutter, a set of readings was made using the regular method of opening and closing the shutter and then a set was made in which there was a delay of 10 seconds in opening the shutter after the end of a shaded period and a delay of 10 seconds in closing the shutter after an exposure period. The results in the latter case were about 3 percent higher. Thus a delay in opening and closing the shutter of even 1 second may result in an error of .3 percent. Variation in the time of opening and closing the shutter may explain the variation of the results with the silver-disk pyrheliometer by different observers. The pyrheliometer readings in this series of tests were made by L. B. Aldrich and W. H. Hoover. With the regular method of reading the pyrheliometer and the shutter operated by hand there was a difference of about .2 percent between the readings of the two observers. When the automatic shutter-opening device was used this difference was reduced to .1 percent or less.

A test was made to determine the effect on the pyrheliometer readings when readings are taken before the pyrheliometer changes to ambient temperature. For this test the pyrheliometer was placed in the chamber of the water bath and the automatic shutter device was used when readings were made. With the water bath at 15° and the pyrheliometer at the same temperature a few readings were made with the bath maintained at 15°. The temperature of the bath water was then changed to about 35° and readings made while the pyrheliometer was changing temperature. The first three readings were from .5 percent to .7 percent too high. When the pyrheliometer was about 5° below the temperature of the bath more readings were taken. These readings agreed with the original set of readings. These results indicate that the pyrheliometer should be near the ambient temperature before making an observation.

In a paper on the Abbot silver-disk pyrheliometer,[11] Mr. L. B. Aldrich discussed in some detail the method of observing with the silver-disk pyrheliometer and listed some precautions to be taken to insure greater accuracy. One precaution should be added. The shutter should be opened immediately at the end of the first shaded period and closed immediately after the end of the exposed period. A delay of a few seconds may result in an error of 1 percent or more.

In 1927 we adopted the longer, 37-cm. tube in pyrheliometers to decrease the area exposed to the sky. In subsequent years a number of the earlier silver-disk pyrheliometers were returned to us for modernization and recalibration. These instruments and their present constants are listed in table 8. Those instruments whose constants (as published in volumes 4 and 5 of the Annals of the Astrophysical Observatory) are still unchanged are omitted in this list.

Modified Ångström pyrheliometer

A third type of pyrheliometer which we have used extensively in the solar-constant program is a modified form of the electrical compensation instrument introduced in 1896 by K. Ångström. This excellent pyrheliometer we have used as a secondary, calibrated against the silver-disk pyrheliometer, though it may also be used as a standard instrument. (For a description, see Ann. Astropyhys. Obs., vol. 6, p. 50, 1942.)

We have used the modified Ångström pyrheliometer daily in all solar-constant observations since 1937 with much satisfaction. It is our practice to recompare with the silver-disk pyrheliometer every few days, and in 16 years of daily use the modified Ångström pyrheliometer has remained very stable. Its advantages include quick response, small sky-brightness effect, and little personal error. As we use it the instrument embodies four modifications of the regular Ångström pyrheliometer:

(1) It is encased in wood to minimize changes of temperature and the effects of gusts of wind.

(2) Electrical contacts are soldered. All pressure contacts are eliminated.

(3) An enclosed mercury switch automatically reverses the current when the shutter is reversed.

(4) A platinum-plated cone is inserted at the base to prevent any radiation which passes the strips from being reflected back to the strips.

Mount Brukkaros and Mount Harqua Hala pyrheliometry

In February 1952 Mr. A. J. Drummond of the Radiation Service, South African Weather Bureau, noting that the pyrheliometry observations made at Mount Brukkaros in the years 1927–32 had not been published in volumes 5 or 6 of the Annals of the Astrophysical Observatory, asked whether they might not be furnished to him for publication in a review of solar radiation in South Africa up to 1950 which he was preparing. We prepared a table of Brukkaros pyrheliometry and forwarded it to Mr. Schumann, Director of the South African Weather Bureau. These data are included herewith in table 9. They are the silver-disk pyrheliometer readings made at Mount Brukkaros, lat. 25° 52′ S., long. 170° 48′ E., 60 miles northwest of Keetmanshoop, altitude 5,200 ft. The values, as with all pyrheliometry in this volume, are in langleys per minute on the Smithsonian Scale of 1913.

For the sake of completeness, since the pyrheliometer values for Mount Harqua Hala, Ariz., lat. 33° 48′ N., long. 113° 20′ W., alt. 5.650 ft., were also omitted from volumes 5 and 6 of the Annals, we include them in table 10. They cover the period October 1920 to January 1, 1925. All readings were made with the silver-disk pyrheliometer.

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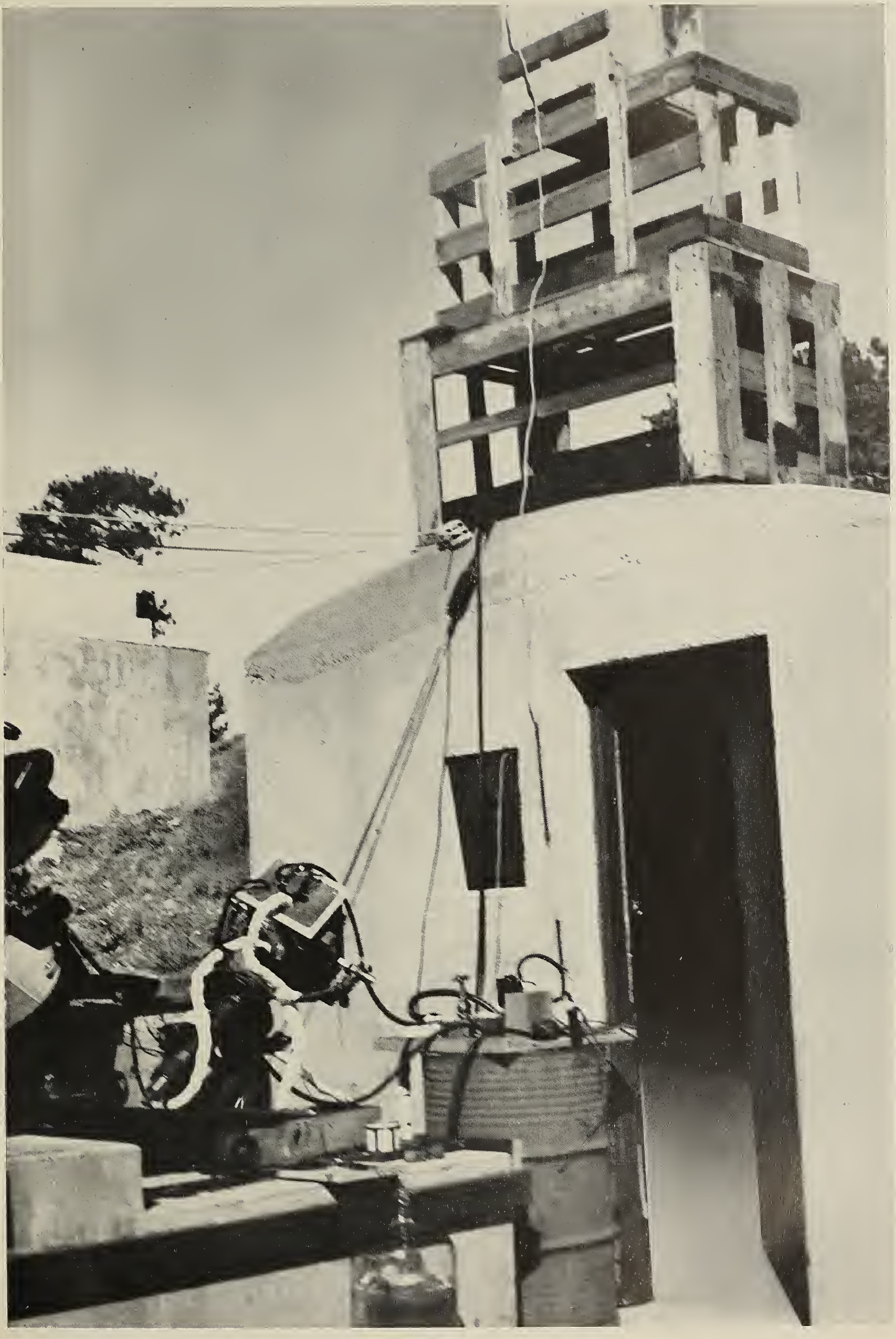
[11] Smithsonian Misc. Coll., vol. 111, No. 14, 1949.



Standard water-flow pyrheliometer as mounted at Table Mountain, Calif., September 1952.

TABLE 8.—*Present constants of silver-disk pyrheliometers*
(*Smithsonian Scale of 1913*)

[This list includes those instruments previously listed in volumes 4 and 5 which have been repaired or altered. Silver-disk pyrheliometers S.I. 1 to S.I. 46 have the original short tube (15 cm.) instead of the longer tube (32 cm.) adopted in 1926. Those whose tubes were later changed to 32 cm. are shown as "modernized."]

Instrument	Present constant	Location and remarks
S.I. 1	0.3733	U. S. Weather Bureau, 1910. Modernized, 1929.
S.I. 4	0.3713	Royal University of Naples, Italy, 1911. Destroyed in World War II.
S.I. 5	0.3715	U. S. Department of Agriculture, Physical Laboratory, 1910. Modernized, 1931. On loan to Astrophysical Observatory since 1926.
S.I. 14	0.3721	University of Toronto, Canada, 1912. Modernized, 1937.
S.I. 16	0.3634	University of Arizona, Tucson, Ariz., 1912. Modernized, 1929. Sent to Service Botanique, Tunis, 1932.
S.I. 17	0.3629	Harvard College Observatory Station, Arequipa, Peru, 1912. Sent to Smithsonian Observing Station, Calama, Chile, 1919. Modernized, 1929.
S.I. 17$_{bis}$	0.3697	Montezuma, Chile, 1952.
S.I. 20	0.3657	Italian Indo-Asiatic Expedition, 1913. Returned to Washington, 1916. Repaired, 1919. Sent to Observatory, Helwan, Egypt, 1920.
S.I. 26	0.3741	Meteorological and Geophysical Service, Batavia, Java, 1914. Modernized and returned, 1947.
S.I. 29	0.3674	Calama, Chile, Smithsonian South American Expedition, 1918.
S.I. 30	0.3622	Do.
S.I. 31	0.3748	Jewish Consumptives Relief Society, Edgewater, Colo., 1920. Repaired, modernized and sent to Carnegie Institution, Colorado and California field stations, 1931.
S.I. 41	0.3697	Observatory on Zugspitze, Germany, 1924 (loan). Modernized, 1927. Sent to Institute of Meteorology, Nanking, China, 1929.
S.I. 42	0.3679	Mount Harqua Hala, Ariz., 1923. Modernized, 1932, and sent to Carnegie Institution, Colorado and California field stations, as substitute for S.I. 31.
S.I. 43	0.3889	Stellenbosch University, South Africa, 1924. Repaired and recalibrated, 1951.
S.I. 44	0.3793	Meteorological Service, Rio de Janeiro, Brazil, 1925. Modernized and returned, 1928.
S.I. 47	0.3735	Smithsonian Solar Observing Station, Mount Brukkaros, South-West Africa, 1926. Smithsonian Solar Observing Station, Calama, Chile, 1932. (Nos. 47 and 48 have special 80-cm. tubes.)
S.I. 48	0.3827	Do.
S.I. 50	0.3800	Physikalisch-Meteorologisches Observatorium, Davos, Switzerland, 1927. Repaired and returned, 1934.
S.I. 53	0.3797	Commonwealth Solar Observatory, Canberra, Australia, 1928. Repaired and returned, 1937.
S.I. 54	0.3824	Commonwealth Solar Observatory, Canberra, Australia, 1928. Repaired and returned, 1939.
S.I. 60	0.3945	American Society of Heating & Ventilating Engineers, Pittsburgh, Pa., 1931. Repaired and returned, 1945.
S.I. 61	0.3867	Meteorological Service of Martinique, Fort de France, 1932.
S.I. 62	0.3960	Do.
S.I. 63	0.3821	Blue Hill Meteorological Observatory, Milton, Mass., 1932. Repaired and returned, 1941.
S.I. 64	0.3870	Laboratoire Actinométrique de l'Observatoire de Trappes, France, 1933.
S.I. 65	0.3913	Institute of Meteorology, Nanking, China, 1933.
S.I. 66	0.3868	Institut de Physique du Globe, Paris, 1934.
S.I. 67	0.3877	Tananarive Observatory, Madagascar, 1935.
S.I. 68	0.3788	Institut de Physique du Globe, Paris, 1935.
S.I. 69	0.3849	Geophysical Observatory, Pilar, Argentina, 1936.
S.I. 70	0.3816	Do.
S.I. 71	0.3737	Commonwealth Solar Observatory, Canberra, Australia, 1936. Repaired and returned, 1937.
S.I. 72	0.3820	Commonwealth Solar Observatory, Canberra, Australia, 1936. Repaired and returned, 1939.
S.I. 73	0.3789	Eppley Laboratories, Newport, R. I., 1937. New thermometer inserted and returned, 1939.
S.I. 74	0.3962	University of Minnesota, Minneapolis, Minn., 1937.
S.I. 75	0.3847	R. Dvorak, Agent, Prague, Czechoslovakia, 1938.
S.I. 76	0.3876	Geophysical Institute, University of Coimbra, Portugal, 1940.
S.I. 77	0.3922	Observatório Central Meteorológico, Lisbon, Portugal, 1940.
S.I. 78	0.3926	U. S. Weather Bureau, Washington, D. C., 1944.
S.I. 79	0.3736	Physics Institute, Helsinki University, Finland, 1946.
S.I. 80	0.3776	Hebrew Technical College, Haifa, Palestine, 1947.
S.I. 81	0.3871	Institute for Advanced Learning, Dublin, Ireland, 1949.
A.P.O. 8$_{bis}$	0.3786	Modernized, 1927. Reserved at Washington for comparisons only.
A.P.O. 9$_{bis}$	0.3684	Zentralanstalt für Meteorologie und Geodynamik, Vienna, Austria, 1928.
A.P.O. 10	0.3720	Built, 1923. Successively sent to Mount Harqua Hala, Ariz., and Table Mountain, Calif.
A.P.O. 11	0.3675	Sent to Mount Brukkaros, South-West Africa, 1925. Modernized and sent to Mount St. Katherine, Egypt, 1933. Repaired, 1938, and successively sent to Tyrone, N. Mex., Miami, Fla., and Table Mountain, Calif.
A.P.O. 13	0.3893	Mount St. Katherine, Egypt, 1932. Rebuilt 1938 and successively sent to Tyrone, N. Mex., Miami, Fla., and Table Mountain, Calif.
A.P.O. 14	0.3854	Mount St. Katherine, 1932; successively sent to Tyrone, N. Mex., Miami, Fla., Table Mountain, Calif.
A.P.O. 17	0.3707	Observatorio Cagigal, Caracas, Venezuela, 1950.
A.P.O. 18	0.3609	Central Meteorological Institute, Bucharest, Roumania, 1950.
S.I. 82	0.3920	Dominion Physical Laboratory, New Zealand, 1949.
S.I. 83	0.3881	Government of Israel Supply Mission, Israel, 1950.
S.I. 84	0.3765	Laboratoire de L'Énergie Solaire, Paris, 1951.
S.I. 85	0.3748	U. S. Air Force Cambridge Research Laboratory, Cambridge, Mass., 1951.
S.I. 86	0.3763	Table Mountain, Calif., 1951.
S.I. 87	0.3680	Helsinki, Finland, 1951.
S.I. 88	0.3721	Institut pour la Recherche Scientifique en Afrique Centrale, Belgian Congo, 1951.
S.I. 89	0.3677	National Observatory of Athens, Greece, 1952.
S.I. 90	0.3642	Upper Air Research Laboratory, University of Rhode Island, Kingston, R. I., 1952.
S.I. 91	0.3727	India Meteorological Department, The Observatory, New Delhi, India, 1952.
S.I. 92	0.3744	University of Wisconsin, Madison, Wis.

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*

Date	Air mass	Pyrh.
1926		
Dec. 9	4.39	1.087
	3.81	1.137
	2.99	1.229
	2.49	1.299
	1.94	1.407
	1.54	1.496
10	4.83	1.077
	4.04	1.143
	3.04	1.267
	2.52	1.339
	1.97	1.425
	1.52	1.500
11	3.07	1.215
	2.75	1.267
	1.99	1.405
	1.51	1.499
12	1.58	1.565
14	2.84	1.285
	1.97	1.412
	1.71	1.450
	1.50	1.505
Dec. 18	2.40	1.382
	2.00	1.449
	1.73	1.496
	1.49	1.540
	1.30	1.576
19	2.54	1.317
	2.01	1.400
	1.49	1.512
29	2.92	1.246
	2.01	1.384
	1.68	1.441
	1.54	1.465
30	2.98	1.266
	2.48	1.351
	1.98	1.438
	1.51	1.524
31	1.25	1.556
	1.21	1.561
1927		
Jan. 1	1.55	1.468
	1.45	1.475
3	2.02	1.501
	1.51	1.578
4	2.73	1.322
	2.28	1.380
	1.95	1.439
	1.70	1.490
	1.52	1.518
5	4.40	1.112
	3.83	1.170
	2.98	1.275
	2.45	1.351
	1.98	1.434
	1.51	1.521
6	4.70	1.122
	3.98	1.197
	3.01	1.305
	2.48	1.365
	1.98	1.435
	1.51	1.503
7	4.70	1.118
	4.00	1.212
	2.98	1.324
1927—*Cont'd*		
Jan. 7	2.47	1.397
	1.98	1.472
	1.50	1.555
8	4.80	1.120
	4.05	1.185
	2.98	1.334
	2.46	1.413
	1.99	1.487
	1.50	1.569
10	3.05	1.245
	2.51	1.311
	2.00	1.390
	1.74	1.428
	1.51	1.489
11	1.61	1.512
	1.425	1.548
	1.33	1.565
	1.24	1.584
	1.17	1.596
Jan. 21	1.09	1.553
22	1.31	1.499
Feb. 1	1.52	1.464
	1.40	1.489
	1.30	1.510
	1.23	1.531
	1.18	1.545
2	4.76	1.077
	3.99	1.152
	2.96	1.281
	2.46	1.338
	1.97	1.415
	1.50	1.495
3	4.89	0.998
	4.10	1.068
	2.98	1.201
	2.48	1.305
	1.98	1.386
	1.51	1.462
4	1.64	1.405
	1.53	1.435
	1.38	1.477
	1.20	1.507
	1.15	1.521
5	1.68	1.465
	1.53	1.509
	1.38	1.530
	1.27	1.555
	1.21	1.568
6	1.11	1.629
	1.07	1.633
	1.04	1.625
	1.02	1.613
	1.02	1.604
7	1.71	1.477
	1.51	1.507
	1.38	1.533
	1.29	1.549
	1.21	1.562
8	1.72	1.435
	1.49	1.487
	1.40	1.509
	1.29	1.534
	1.17	1.565
1927—*Cont'd*		
Feb. 17	1.07	1.555
	1.05	1.548
	1.04	1.553
	1.04	1.554
	1.04	1.555
18	1.10	1.519
	1.08	1.525
	1.06	1.533
	1.04	1.554
19	1.53	1.433
	1.37	1.477
	1.29	1.492
	1.21	1.514
	1.16	1.528
20	1.36	1.495
	1.25	1.516
	1.18	1.528
	1.13	1.538
	1.09	1.546
21	1.54	1.445
	1.41	1.473
	1.31	1.489
	1.23	1.506
	1.18	1.530
22	1.39	1.470
	1.32	1.482
	1.11	1.528
	1.08	1.537
	1.06	1.536
23	1.65	1.445
	1.52	1.473
	1.40	1.500
	1.31	1.520
	1.24	1.535
24	1.58	1.438
	1.48	1.459
	1.39	1.479
	1.31	1.495
	1.25	1.510
26	1.71	1.413
	1.55	1.448
	1.40	1.481
	1.30	1.503
	1.23	1.519
27	2.00	1.327
	1.81	1.367
	1.65	1.405
	1.51	1.436
	1.40	1.453
28	1.44	1.463
	1.34	1.493
	1.26	1.500
	1.20	1.509
	1.15	1.517
Mar. 1	2.01	1.369
	1.82	1.401
	1.67	1.430
	1.50	1.455
	1.40	1.475
3	2.00	1.365
	1.79	1.403
	1.63	1.434
	1.50	1.458
	1.40	1.485
1927—*Cont'd*		
Mar. 4	2.46	1.312
	2.01	1.346
	1.80	1.423
	1.64	1.451
	1.51	1.477
5	1.41	1.458
7	1.40	1.419
	1.31	1.451
	1.24	1.468
	1.17	1.465
8	1.48	1.412
	1.39	1.437
	1.31	1.458
	1.23	1.477
	1.17	1.492
10	1.36	1.465
	1.28	1.479
	1.21	1.493
	1.16	1.507
	1.13	1.512
11	2.53	1.276
	2.02	1.367
	1.82	1.402
	1.66	1.435
	1.52	1.465
12	2.51	1.293
	2.01	1.384
	1.81	1.422
	1.64	1.449
	1.51	1.468
13	4.94	1.142
	4.03	1.234
	2.95	1.335
	2.48	1.381
	2.00	1.431
	1.50	1.506
	1.38	1.524
14	5.01	1.074
	4.17	1.170
	2.98	1.293
	2.48	1.355
	1.99	1.438
	1.50	1.526
15	2.25	1.366
	1.94	1.420
	1.74	1.455
	1.57	1.489
	1.46	1.507
16	2.50	1.214
	2.13	1.277
	1.88	1.322
	1.67	1.370
17	1.99	1.368
	1.82	1.399
	1.69	1.415
	1.56	1.445
	1.46	1.464
20	2.51	1.280
	2.01	1.362
	1.78	1.398
	1.64	1.431
	1.51	1.458
21	3.00	1.208
	2.48	1.293
	2.01	1.376
1927—*Cont'd*		
Mar. 21	1.76	1.422
	1.50	1.473
22	4.95	1.043
	4.02	1.132
	3.07	1.234
	2.51	1.316
	2.00	1.396
	1.51	1.477
29	2.35	1.306
	2.02	1.362
	1.82	1.396
	1.67	1.422
	1.41	1.472
Apr. 1	2.58	1.310
	2.07	1.384
	1.80	1.414
	1.47	1.458
2	2.92	1.255
	2.39	1.322
	2.03	1.355
	1.75	1.392
	1.59	1.420
3	2.77	1.266
	2.31	1.323
	2.00	1.370
	1.76	1.407
	1.60	1.436
4	4.85	1.011
	3.98	1.110
	3.03	1.220
	2.50	1.288
	2.00	1.362
	1.50	1.466
7	1.30	1.490
	1.25	1.494
	1.23	1.508
	1.20	1.508
	1.19	1.512
8	1.51	1.415
	1.42	1.436
	1.37	1.446
	1.31	1.459
	1.27	1.468
13	1.28	1.470
15	2.85	1.202
	2.31	1.279
	2.00	1.330
	1.79	1.367
	1.53	1.426
16	2.99	1.246
	2.46	1.321
	2.02	1.383
	1.79	1.415
	1.51	1.462
17	2.99	1.345
	2.49	1.408
	2.00	1.477
	1.78	1.502
	1.51	1.550
18	5.03	1.128
	4.11	1.212
	3.04	1.324
	2.49	1.383
	2.00	1.462
	1.51	1.533

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1927—*Cont'd*		
Apr. 19	3.05	1.204
	2.44	1.301
	2.03	1.363
22	2.98	1.277
	2.48	1.345
	2.00	1.422
	1.78	1.455
	1.52	1.490
23	3.01	1.305
	2.50	1.367
	2.02	1.448
	1.79	1.481
	1.51	1.523
24	2.88	1.331
	2.42	1.422
	2.00	1.479
	1.80	1.505
	1.50	1.547
25	3.04	1.281
	2.53	1.349
	2.00	1.411
	1.80	1.445
	1.50	1.498
26	4.85	1.080
	4.03	1.138
	3.04	1.254
	2.51	1.330
	2.00	1.405
	1.50	1.502
27	4.90	1.009
	4.09	1.109
	3.00	1.227
	2.50	1.287
	2.00	1.364
	1.50	1.448
28	1.70	1.410
	1.60	1.431
	1.49	1.441
29	4.70	1.112
	4.02	1.180
	2.97	1.293
	2.50	1.351
	1.99	1.413
	1.50	1.500
30	1.50	1.439
	1.43	1.451
	1.38	1.465
	1.35	1.470
	1.33	1.473
May 3	1.99	1.308
	1.81	1.341
	1.65	1.381
	1.50	1.400
	1.44	1.407
4	2.01	1.304
	1.86	1.331
	1.75	1.351
	1.62	1.372
	1.56	1.385
6	3.01	1.223
	2.52	1.299
	1.74	1.418
	1.50	1.459
7	4.97	1.068
	4.14	1.156
May 7	3.00	1.285
	2.48	1.345
	2.02	1.413
	1.50	1.506
8	5.04	1.048
	4.20	1.137
	3.01	1.267
	2.50	1.335
	2.01	1.405
	1.51	1.480
10	4.89	0.980
	4.15	1.052
	2.99	1.176
	2.51	1.244
	2.01	1.317
	1.50	1.407
11	3.00	1.258
	2.01	1.412
	1.41	1.516
12	3.00	1.317
	2.48	1.376
	1.99	1.458
	1.78	1.472
	1.60	1.499
13	5.06	1.098
	4.21	1.189
	2.97	1.320
	2.51	1.373
	2.00	1.446
	1.50	1.535
14	3.03	1.299
	2.54	1.360
	2.02	1.431
	1.72	1.478
	1.51	1.510
15	4.97	1.111
	4.17	1.189
	3.00	1.299
	2.51	1.364
	2.01	1.434
	1.50	1.507
16	4.91	1.159
	4.13	1.234
	3.00	1.352
	2.50	1.409
	1.98	1.488
	1.50	1.523
17	4.88	1.087
	4.12	1.174
	3.00	1.299
	2.50	1.365
	1.98	1.438
	1.50	1.507
18	4.95	1.096
	4.17	1.174
	2.97	1.305
	2.50	1.374
	2.00	1.452
	1.50	1.531
19	5.00	1.023
	4.18	1.110
	3.03	1.229
	2.50	1.308
	1.99	1.389
	1.55	1.445
May 20	5.03	0.990
	4.21	1.077
	3.00	1.220
	2.50	1.288
	2.00	1.370
	1.50	1.479
21	2.99	1.258
	2.48	1.331
	2.00	1.400
	1.50	1.495
22	4.94	1.075
	4.16	1.155
	2.99	1.271
	2.45	1.350
	1.99	1.409
	1.50	1.472
26	2.91	1.223
	2.47	1.292
	2.19	1.340
	1.97	1.385
	1.83	1.412
27	5.01	0.944
	4.19	1.331
	2.97	1.151
	2.50	1.221
	2.00	1.299
	1.50	1.383
30	4.96	0.908
	4.17	0.997
	3.01	1.126
	2.49	1.211
	1.99	1.282
	1.50	1.410
31	4.94	0.908
	4.17	1.009
	2.99	1.159
	2.50	1.228
	2.00	1.301
	1.50	1.398
June 1	4.97	0.877
	4.20	0.959
	2.97	1.110
	2.50	1.174
	1.99	1.266
	1.50	1.372
2	2.17	1.266
	2.00	1.299
	1.85	1.328
	1.73	1.351
	1.64	1.372
5	4.96	1.010
	4.22	1.090
	3.05	1.230
	2.52	1.299
	2.00	1.381
	1.51	1.465
6	3.01	1.286
	2.71	1.330
	2.48	1.362
	2.00	1.429
	1.55	1.494
7	3.00	1.168
	2.53	1.246
	2.31	1.281
	2.12	1.311
June 8	1.63	1.309
	1.59	1.309
9	2.99	1.157
	2.51	1.238
	2.00	1.314
	1.75	1.363
	1.70	1.371
10	5.00	0.955
	4.22	1.050
	3.02	1.185
	2.49	1.247
	2.00	1.333
	1.52	1.422
11	5.02	0.954
	4.23	1.046
	3.02	1.185
	2.50	1.253
	1.99	1.344
	1.52	1.448
12	2.50	1.277
	2.23	1.312
	1.64	1.421
	1.60	1.429
	1.57	1.436
14	3.05	1.264
	2.53	1.336
	2.00	1.434
	1.72	1.446
	1.59	1.501
16	4.95	1.046
	4.19	1.115
	3.01	1.237
	2.50	1.293
	2.00	1.350
	1.57	1.436
	1.54	1.442
17	5.04	0.956
	4.25	1.029
	3.00	1.169
	2.50	1.238
	2.00	1.317
	1.53	1.422
18	5.01	0.975
	4.25	1.036
	3.00	1.182
	2.50	1.259
	2.00	1.327
	1.53	1.423
19	5.04	0.941
	4.25	1.015
	3.03	1.164
	2.49	1.245
	1.99	1.322
	1.53	1.399
20	5.03	1.010
	4.23	1.099
	3.00	1.241
	2.50	1.311
	2.00	1.389
	1.53	1.469
21	5.00	0.962
	4.23	1.042
	2.99	1.189
	2.49	1.262
June 21	1.99	1.339
	1.33	1.420
25	4.93	0.974
	4.20	1.052
	3.00	1.176
	2.50	1.252
	2.00	1.330
	1.53	1.392
July 1	3.01	1.269
	2.56	1.327
	2.00	1.404
	1.73	1.455
	1.60	1.479
2	4.90	1.065
	4.15	1.141
	3.02	1.288
	2.52	1.357
	1.99	1.409
	1.52	1.495
3	4.97	1.094
	4.18	1.164
	3.00	1.279
	2.50	1.334
	2.00	1.416
	1.52	1.500
4	5.00	1.084
	4.23	1.154
	3.01	1.285
	2.51	1.341
	2.00	1.402
	1.52	1.494
5	5.01	0.918
	4.24	0.998
	2.99	1.146
	2.50	1.225
	2.00	1.306
	1.87	1.330
	1.52	1.414
6	2.98	1.335
	2.50	1.387
	1.99	1.455
	1.82	1.479
	1.73	1.497
7	5.00	1.052
	4.22	1.149
	3.01	1.270
	2.50	1.330
	2.00	1.392
	1.51	1.455
8	4.82	0.833
	4.20	0.900
	3.01	1.057
	2.50	1.144
	2.02	1.224
	1.51	1.307
9	2.50	1.029
	2.01	1.130
	1.85	1.177
	1.73	1.217
	1.51	1.267
10	4.98	0.850
	4.21	0.937
	3.02	1.065
	2.49	1.149

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1927—*Cont'd*		
July 10	2.00	1.234
	1.50	1.336
11	4.96	0.978
	4.18	1.076
	3.00	1.193
	2.50	1.267
	2.00	1.353
	1.50	1.455
12	2.00	1.269
	1.72	1.330
	1.64	1.280
13	5.00	1.045
	4.21	1.127
	3.00	1.269
	2.50	1.320
	2.00	1.399
	1.50	1.485
14	5.02	1.089
	4.23	1.170
	3.00	1.291
	2.50	1.362
	2.00	1.438
	1.50	1.517
15	5.00	1.102
	4.22	1.184
	2.98	1.302
	2.50	1.367
	2.00	1.436
	1.50	1.531
16	4.98	1.114
	4.20	1.194
	3.01	1.315
	2.50	1.378
	2.00	1.443
	1.50	1.519
17	4.99	1.089
	4.20	1.169
	3.01	1.290
	2.50	1.336
	2.00	1.416
	1.50	1.501
19	1.99	1.076
	1.82	1.114
	1.71	1.141
	1.60	1.169
	1.53	1.186
20	2.65	1.134
	2.33	1.185
	2.07	1.232
	1.90	1.261
	1.77	1.288
21	2.20	1.305
	2.00	1.333
	1.84	1.373
	1.71	1.393
	1.62	1.405
22	3.03	1.279
	2.52	1.323
	2.00	1.398
	1.52	1.472
23	5.02	1.003
	4.20	1.108
	3.00	1.222
	2.49	1.289
1927—*Cont'd*		
July 23	1.99	1.370
	1.50	1.454
25	4.92	1.094
	4.13	1.152
	3.03	1.269
	2.50	1.334
	2.00	1.416
	1.50	1.491
26	5.05	1.056
	4.23	1.131
	3.00	1.269
	2.50	1.336
	2.00	1.403
	1.50	1.482
27	5.03	1.062
	4.22	1.147
	2.98	1.278
	2.50	1.338
	2.00	1.405
	1.49	1.500
28	4.98	1.034
	4.18	1.117
	2.97	1.251
	2.50	1.287
	1.99	1.379
	1.50	1.465
29	2.98	1.230
	2.54	1.276
	2.03	1.363
	1.75	1.405
	1.50	1.446
30	2.57	1.143
	2.08	1.237
	1.89	1.277
	1.75	1.305
	1.55	1.351
Aug. 3	4.87	0.961
	4.13	1.031
	2.99	1.189
	2.49	1.266
	2.00	1.345
	1.49	1.469
5	5.04	0.991
	4.20	1.061
	3.03	1.192
	2.50	1.277
	2.00	1.346
	1.50	1.452
6	4.97	1.087
	4.14	1.168
	2.97	1.280
	2.49	1.336
	1.99	1.415
	1.43	1.514
7	4.90	1.096
	4.11	1.181
	3.01	1.296
	2.50	1.361
	2.00	1.427
	1.50	1.509
8	2.35	1.407
	2.05	1.453
	1.88	1.476
	1.43	1.544
1927—*Cont'd*		
Aug. 12	1.48	1.197
	1.43	1.231
16	2.50	1.103
	2.01	1.185
	1.82	1.220
	1.65	1.249
	1.52	1.285
17	2.99	0.952
	2.50	1.050
	1.97	1.189
	1.60	1.286
	1.51	1.310
18	3.08	1.068
	2.56	1.156
	1.96	1.253
	1.70	1.300
	1.50	1.340
26	3.03	1.323
	2.51	1.379
	2.01	1.455
	1.66	1.509
	1.50	1.535
28	5.00	1.108
	4.06	1.212
	2.84	1.348
	2.43	1.399
	2.00	1.465
	1.49	1.543
29	5.00	1.107
	4.07	1.204
	2.98	1.317
	2.48	1.386
	1.99	1.455
	1.50	1.527
30	4.98	1.025
	4.06	1.131
	2.98	1.241
	2.51	1.308
	1.99	1.393
	1.50	1.490
31	4.88	1.037
	3.98	1.175
	2.50	1.349
	2.00	1.423
	1.50	1.502
Sept. 1	4.99	1.070
	4.06	1.159
	2.99	1.267
	2.48	1.342
	2.01	1.419
	1.49	1.506
2	2.50	1.302
	1.99	1.387
	1.80	1.422
	1.65	1.449
	1.50	1.478
3	2.50	1.229
	2.01	1.323
	1.80	1.365
	1.65	1.396
	1.50	1.438
4	2.48	1.092
	1.97	1.206
	1.77	1.251
1927—*Cont'd*		
Sept. 4	1.62	1.281
	1.50	1.299
5	2.49	1.114
	2.00	1.200
	1.80	1.239
	1.63	1.274
	1.50	1.300
6	1.75	1.685
	1.62	1.305
	1.50	1.321
	1.41	1.346
	1.33	1.380
8	1.79	1.389
	1.65	1.433
	1.50	1.472
	1.45	1.485
9	2.29	1.044
	1.98	1.126
	1.78	1.170
	1.62	1.204
	1.50	1.237
16	4.93	1.169
	4.02	1.252
	3.01	1.368
	2.50	1.413
	2.00	1.479
	1.50	1.555
17	4.98	1.138
	4.03	1.230
	3.07	1.332
	2.50	1.407
	2.00	1.479
	1.49	1.551
18	2.00	1.448
	1.82	1.479
	1.69	1.495
	1.58	1.509
	1.49	1.522
19	3.00	1.208
	2.51	1.273
	2.00	1.364
	1.69	1.412
	1.51	1.451
21	2.33	1.199
	2.00	1.245
	1.78	1.305
	1.63	1.330
	1.50	1.374
22	4.78	0.970
	3.90	1.066
	2.96	1.179
	2.46	1.255
	1.98	1.342
	1.50	1.431
23	4.61	0.938
	3.83	1.036
	2.57	1.157
	2.49	1.229
	1.99	1.315
	1.49	1.408
24	2.47	1.238
	1.99	1.326
	1.78	1.367
	1.63	1.396
	1.50	1.409
1927—*Cont'd*		
Sept. 25	2.96	1.257
	2.51	1.314
	1.98	1.412
	1.74	1.457
	1.51	1.500
26	2.98	1.192
	2.50	1.263
	1.99	1.353
	1.51	1.462
28	2.92	1.159
	2.50	1.226
	1.98	1.312
	1.69	1.368
	1.50	1.410
30	4.94	0.826
	4.00	0.945
	2.99	1.083
	2.50	1.175
	1.98	1.283
	1.50	1.372
Oct. 1	3.00	1.072
	2.50	1.153
	2.00	1.254
	1.77	1.292
	1.50	1.346
7	2.00	1.448
	1.78	1.485
	1.61	1.514
	1.48	1.541
	1.37	1.570
8	4.61	1.150
	3.81	1.232
	2.95	1.340
	2.48	1.403
	1.92	1.481
	1.49	1.546
9	1.50	1.294
	1.40	1.318
	1.33	1.362
11	1.59	1.362
	1.44	1.406
12	2.06	1.249
	1.55	1.360
	1.44	1.379
	1.32	1.437
14	3.00	1.222
	2.53	1.281
	2.03	1.392
	1.57	1.487
	1.48	1.511
15	2.94	1.272
	2.39	1.369
	1.96	1.433
	1.60	1.494
	1.48	1.521
16	3.02	1.240
	2.50	1.312
	2.00	1.399
	1.61	1.470
	1.50	1.491
17	2.98	1.232
	2.52	1.303
	2.01	1.381
	1.76	1.441
	1.52	1.502

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1927—*Cont'd*		
Oct. 28	1.65	1.394
	1.50	1.422
	1.40	1.425
	1.29	1.471
	1.24	1.506
29	1.98	1.401
	1.77	1.429
	1.64	1.443
	1.50	1.480
	1.40	1.505
31	1.95	1.386
	1.75	1.428
	1.61	1.456
	1.51	1.488
	1.40	1.503
Nov. 1	1.55	1.471
	1.45	1.473
	1.31	1.528
	1.20	1.536
	1.11	1.585
2	4.84	1.051
	4.00	1.110
	3.04	1.237
	2.50	1.312
	2.01	1.388
	1.56	1.476
3	4.81	1.062
	3.96	1.133
	3.00	1.267
	2.48	1.330
	2.01	1.416
	1.50	1.510
4	1.65	1.437
	1.40	1.491
	1.30	1.530
	1.24	1.545
6	1.08	1.544
	1.06	1.553
	1.04	1.543
	1.03	1.565
	1.02	1.554
10	4.91	1.117
	4.05	1.195
	2.98	1.318
	2.48	1.389
	2.00	1.470
	1.50	1.568
11	1.65	1.500
	1.52	1.528
	1.43	1.556
	1.34	1.557
	1.29	1.576
12	1.51	1.499
	1.41	1.527
	1.30	1.542
	1.22	1.573
	1.17	1.582
13	4.94	1.062
	4.05	1.160
	3.00	1.301
	2.49	1.358
	1.99	1.444
	1.48	1.551
14	1.12	1.581
1927—*Cont'd*		
Nov. 15	1.99	1.481
	1.67	1.531
	1.54	1.547
	1.43	1.574
16	2.01	1.463
	1.80	1.488
	1.65	1.512
	1.50	1.546
	1.40	1.569
22	1.01	1.577
24	1.60	1.520
	1.49	1.520
	1.40	1.574
	1.30	1.577
	1.24	1.589
25	1.17	1.565
Dec. 1	1.62	1.464
	1.49	1.503
	1.41	1.518
	1.34	1.533
	1.27	1.550
3	1.64	1.542
	1.50	1.565
	1.30	1.609
	1.21	1.618
	1.11	1.621
4	1.94	1.466
	1.65	1.526
	1.50	1.559
	1.36	1.588
	1.30	1.601
5	2.00	1.445
	1.78	1.489
	1.50	1.529
	1.40	1.558
	1.31	1.580
7	2.00	1.373
	1.69	1.436
	1.50	1.475
	1.39	1.488
	1.30	1.532
8	3.02	1.328
	2.48	1.373
	2.01	1.440
	1.51	1.504
9	4.77	1.026
	3.96	1.105
	3.00	1.250
	2.48	1.335
	2.02	1.424
	1.50	1.525
10	3.00	1.349
	2.50	1.406
	2.00	1.482
	1.70	1.525
	1.50	1.553
11	1.78	1.563
	1.50	1.594
	1.40	1.628
	1.35	1.631
12	1.94	1.470
	1.51	1.554
13	3.00	1.309
	2.50	1.374
1927—*Cont'd*		
Dec. 13	1.99	1.452
	1.51	1.548
14	2.42	1.355
	2.00	1.430
	1.65	1.524
	1.40	1.544
15	1.68	1.465
	1.51	1.498
	1.40	1.524
	1.29	1.551
	1.22	1.571
17	1.18	1.506
	1.14	1.518
	1.11	1.542
18	2.01	1.367
	1.84	1.406
	1.65	1.436
	1.51	1.480
	1.40	1.492
19	2.00	1.377
	1.83	1.411
	1.66	1.453
	1.50	1.482
	1.40	1.501
23	1.11	1.502
	1.07	1.513
	1.05	1.516
	1.03	1.524
	1.01	1.535
24	2.00	1.301
	1.81	1.333
	1.66	1.367
25	1.12	1.550
	1.09	1.557
27	1.11	1.562
	1.08	1.580
	1.06	1.573
	1.05	1.578
	1.04	1.586
28	1.13	1.625
	1.10	1.644
	1.08	1.641
	1.05	1.653
	1.03	1.660
29	1.27	1.566
	1.21	1.560
	1.16	1.575
	1.12	1.578
	1.10	1.588
30	4.82	1.036
	4.00	1.125
	3.00	1.250
	2.50	1.316
	2.00	1.406
	1.51	1.506
31	1.10	1.563
	1.07	1.573
1928		
Jan. 5	1.40	1.612
	1.34	1.623
	1.27	1.625
	1.21	1.635
	1.16	1.661
1928—*Cont'd*		
Jan. 6	4.83	1.187
	4.01	1.258
	3.00	1.380
	2.49	1.435
	2.00	1.507
	1.50	1.591
7	1.99	1.464
	1.71	1.507
	1.60	1.526
	1.50	1.558
	1.40	1.562
8	2.01	1.394
	1.75	1.462
	1.61	1.484
	1.50	1.506
	1.40	1.519
9	2.04	1.479
	1.82	1.519
	1.26	1.607
	1.20	1.621
	1.14	1.643
10	2.00	1.402
	1.71	1.446
	1.56	1.472
	1.48	1.488
	1.40	1.502
11	1.58	1.454
	1.47	1.488
	1.40	1.501
	1.30	1.521
	1.23	1.553
12	1.28	1.472
	1.22	1.477
	1.17	1.481
13	1.30	1.510
	1.22	1.528
	1.16	1.540
	1.11	1.550
	1.07	1.560
15	1.06	1.542
	1.04	1.574
16	2.01	1.521
	1.67	1.561
	1.56	1.577
	1.49	1.587
	1.40	1.624
17	3.02	1.270
	2.48	1.338
	2.00	1.427
	1.50	1.530
18	2.00	1.397
	1.81	1.447
	1.60	1.478
	1.50	1.501
	1.40	1.523
19	1.99	1.428
	1.80	1.479
	1.58	1.526
	1.50	1.551
	1.40	1.568
22	2.00	1.359
	1.81	1.398
	1.47	1.489
	1.40	1.485
1928—*Cont'd*		
Jan. 23	1.58	1.445
	1.47	1.447
	1.37	1.464
	1.29	1.487
	1.25	1.507
24	2.00	1.369
	1.82	1.407
	1.59	1.451
	1.49	1.475
	1.40	1.487
26	2.00	1.468
	1.80	1.507
	1.60	1.533
	1.50	1.555
	1.40	1.572
27	1.94	1.438
	1.71	1.478
	1.59	1.496
	1.50	1.513
	1.41	1.526
28	5.01	1.103
	4.12	1.196
	3.01	1.320
	2.50	1.388
	1.99	1.464
	1.50	1.547
29	1.98	1.461
	1.80	1.491
	1.60	1.525
	1.50	1.556
	1.40	1.571
30	4.99	1.037
	4.08	1.122
	3.00	1.261
	2.51	1.322
	2.01	1.420
	1.54	1.512
31	1.30	1.516
	1.24	1.538
	1.19	1.548
	1.15	1.572
	1.11	1.570
Feb. 4	1.99	1.388
	1.80	1.421
	1.60	1.460
	1.51	1.477
	1.41	1.502
6	1.94	1.409
7	1.99	1.375
	1.80	1.422
	1.60	1.462
	1.50	1.474
	1.41	1.485
8	1.90	1.457
	1.75	1.482
	1.60	1.508
	1.50	1.530
	1.40	1.548
9	2.48	1.334
	1.99	1.418
	1.80	1.439
	1.60	1.473
	1.50	1.488
10	1.48	1.477
	1.40	1.492

Table 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1928—*Cont'd*		
Feb. 10	1.30	1.507
	1.24	1.527
	1.20	1.539
11	1.07	1.544
	1.05	1.549
12	2.48	1.341
	1.98	1.444
	1.80	1.469
	1.60	1.508
	1.50	1.527
13	1.60	1.443
	1.50	1.348
	1.41	1.458
	1.15	1.553
	1.12	1.573
14	2.44	1.453
	2.00	1.514
	1.80	1.557
	1.60	1.586
	1.50	1.602
15	4.98	1.112
	4.08	1.192
	3.00	1.311
	2.47	1.389
	1.99	1.453
	1.50	1.525
16	2.51	1.395
	2.01	1.480
	1.80	1.513
	1.60	1.539
	1.51	1.558
18	2.50	1.325
	2.00	1.414
	1.80	1.445
	1.60	1.494
	1.50	1.505
19	2.48	1.296
	2.00	1.413
	1.79	1.421
	1.60	1.455
	1.50	1.478
20	2.49	1.318
	2.00	1.416
	1.80	1.441
	1.60	1.496
	1.49	1.517
21	2.50	1.257
	2.00	1.381
	1.80	1.413
	1.60	1.461
	1.50	1.478
22	2.50	1.325
	2.01	1.413
	1.82	1.449
	1.61	1.490
	1.50	1.510
23	2.01	1.357
	1.78	1.402
	1.51	1.455
	1.40	1.482
	1.31	1.505
24	2.52	1.324
	2.00	1.418
	1.80	1.448
Feb. 24	1.60	1.481
	1.50	1.499
25	2.50	1.232
	2.00	1.355
	1.80	1.407
	1.61	1.447
	1.50	1.461
26	2.51	1.328
	2.00	1.408
	1.80	1.456
	1.60	1.492
	1.50	1.512
27	2.49	1.363
	1.99	1.448
	1.80	1.485
	1.60	1.498
	1.50	1.533
28	1.23	1.488
	1.19	1.502
	1.15	1.509
Mar. 3	2.49	1.296
	2.00	1.384
	1.81	1.414
	1.60	1.447
	1.50	1.466
4	2.00	1.354
	1.80	1.381
6	1.07	1.533
7	2.50	1.264
	2.00	1.346
	1.80	1.382
	1.60	1.422
	1.50	1.433
10	2.47	1.283
	1.99	1.356
	1.80	1.394
	1.60	1.428
	1.49	1.444
11	2.50	1.262
	2.00	1.341
	1.80	1.368
	1.61	1.405
	1.50	1.435
13	2.98	1.249
	2.48	1.320
	2.14	1.367
	1.58	1.451
17	2.48	1.305
	2.00	1.400
	1.81	1.423
	1.60	1.453
	1.50	1.475
18	3.04	1.285
	2.50	1.358
	2.00	1.423
	1.80	1.457
	1.50	1.531
19	1.80	1.416
	1.60	1.446
	1.50	1.443
	1.41	1.465
	1.30	1.495
20	1.49	1.460
	1.25	1.515
	1.21	1.518
Mar. 20	1.18	1.529
	1.15	1.539
23	2.43	1.252
	2.00	1.334
	1.81	1.361
	1.60	1.396
	1.50	1.414
28	1.20	1.612
	1.18	1.624
	1.16	1.605
	1.14	1.609
29	3.02	1.298
	2.50	1.387
	2.00	1.447
	1.80	1.487
	1.51	1.547
30	5.05	1.054
	4.13	1.127
	3.03	1.257
	2.50	1.327
	2.00	1.412
	1.50	1.494
31	5.02	1.074
	4.12	1.145
	3.02	1.271
	2.48	1.344
	1.98	1.426
	1.50	1.499
Apr. 1	2.51	1.345
	2.01	1.420
	1.80	1.447
	1.60	1.487
	1.51	1.505
2	4.98	1.046
	4.07	1.130
	3.02	1.245
	2.50	1.322
	2.00	1.404
	1.50	1.497
3	2.37	1.301
	2.01	1.365
	1.82	1.401
	1.51	1.458
	1.41	1.465
4	1.41	1.433
	1.34	1.443
	1.28	1.456
	1.23	1.475
	1.20	1.485
6	3.07	1.267
	2.50	1.353
	2.00	1.425
	1.70	1.454
	1.50	1.487
7	1.38	1.478
9	3.00	1.289
	2.51	1.348
	2.00	1.414
	1.69	1.473
	1.50	1.497
10	2.99	1.324
	2.49	1.376
	2.00	1.457
	1.50	1.528
Apr. 11	2.04	1.426
	1.46	1.520
	1.39	1.534
	1.35	1.542
15	4.95	1.102
	4.10	1.185
	3.03	1.297
	2.50	1.361
	2.00	1.431
	1.51	1.495
16	3.00	1.273
	2.49	1.331
	2.00	1.411
	1.69	1.456
	1.51	1.487
17	4.95	1.090
	4.11	1.159
	3.00	1.288
	2.49	1.351
	2.00	1.422
	1.51	1.498
19	2.50	1.323
	2.01	1.389
	1.81	1.409
	1.61	1.465
	1.51	1.479
20	2.48	1.330
	2.00	1.394
	1.80	1.428
	1.60	1.464
	1.50	1.482
21	3.01	1.300
	2.52	1.378
	2.00	1.438
	1.70	1.495
	1.50	1.529
23	3.02	1.212
	2.48	1.270
	2.00	1.355
	1.79	1.386
	1.60	1.431
24	3.00	1.224
	2.50	1.293
	2.01	1.364
	1.70	1.422
	1.50	1.467
25	5.01	1.024
	4.13	1.105
	3.03	1.218
	2.49	1.285
	2.02	1.365
	1.50	1.460
26	4.92	1.034
	4.09	1.129
	3.01	1.245
	2.50	1.313
	2.00	1.350
	1.50	1.482
27	4.99	1.062
	4.13	1.140
	3.01	1.268
	2.50	1.335
	2.01	1.404
	1.50	1.484
Apr. 28	4.94	1.065
	4.10	1.138
	3.02	1.261
	2.50	1.330
	2.01	1.405
	1.50	1.487
29	3.01	1.223
	2.51	1.298
	2.23	1.339
	2.00	1.372
	1.81	1.405
May 1	2.96	1.189
	2.50	1.240
	2.00	1.348
	1.70	1.398
	1.50	1.444
2	3.01	1.206
	2.51	1.277
	2.01	1.366
	1.81	1.397
	1.50	1.453
5	2.49	1.271
	2.00	1.353
	1.70	1.410
	1.61	1.414
	1.50	1.454
6	3.03	1.207
	2.51	1.282
	2.01	1.352
	1.70	1.421
	1.50	1.453
7	3.00	1.260
	2.48	1.318
	2.00	1.390
	1.50	1.465
8	4.99	1.033
	4.15	1.104
	3.01	1.236
	2.51	1.316
	2.00	1.382
	1.50	1.475
9	4.97	1.024
	4.09	1.106
	3.00	1.230
	2.50	1.288
	2.00	1.358
	1.50	1.457
11	1.80	1.441
	1.50	1.492
12	3.00	1.256
	2.51	1.321
	1.99	1.387
	1.71	1.437
	1.50	1.481
13	4.98	1.062
	4.11	1.158
	3.00	1.267
	2.48	1.329
	2.00	1.407
	1.50	1.478
14	3.12	1.226
	2.50	1.304
	2.00	1.387
	1.70	1.423
	1.50	1.455

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1928—*Cont'd*			**1928**—*Cont'd*			**1928**—*Cont'd*			**1928**—*Cont'd*			**1928**—*Cont'd*		
May 15	3.01	1.241	May 29	1.69	1.378	June 13	5.06	1.105	June 25	3.00	1.374	July 15	1.68	1.491
	2.51	1.303		1.50	1.413		4.20	1.194		2.51	1.420		1.60	1.497
	1.99	1.381	30	1.54	1.396		3.01	1.313		2.00	1.481	16	2.49	1.218
	1.70	1.414		1.48	1.402		2.50	1.373		1.55	1.531		2.00	1.301
	1.50	1.446	31	2.49	1.305		2.00	1.432	26	2.49	1.362		1.79	1.343
16	5.05	1.048		1.99	1.397		1.52	1.517		2.00	1.433		1.70	1.365
	4.15	1.117		1.80	1.433	14	3.02	1.300		1.80	1.452		1.61	1.389
	3.02	1.242		1.70	1.452		2.50	1.354		1.70	1.473	17	3.00	1.226
	2.50	1.315		1.50	1.498		2.00	1.418		1.60	1.492		2.48	1.309
	2.00	1.389	June 1	2.00	1.380		1.80	1.437	27	3.00	1.306		2.00	1.378
	1.50	1.479		1.90	1.396		1.57	1.481		2.49	1.381		1.80	1.416
17	1.72	1.436		1.60	1.452	15	3.00	1.294		2.00	1.443		1.60	1.458
	1.51	1.476		1.54	1.459		2.50	1.352		1.80	1.474	18	4.88	1.010
18	3.00	1.217		1.50	1.465		2.00	1.426		1.60	1.507		4.06	1.091
	2.50	1.289	2	2.19	1.321		1.81	1.457	28	3.02	1.322		3.00	1.225
	1.98	1.370		1.99	1.342		1.60	1.485		2.49	1.396		2.50	1.293
	1.70	1.437		1.91	1.348	16	5.00	1.065		2.00	1.449		2.00	1.376
	1.58	1.453		1.59	1.418		4.15	1.137		1.55	1.523		1.50	1.456
19	1.80	1.389		1.50	1.443		3.01	1.280	29	3.00	1.334	19	2.49	1.198
	1.70	1.409	3	2.50	1.287		2.50	1.349		2.50	1.388		1.99	1.293
20	2.98	1.245		2.18	1.338		1.99	1.407		2.22	1.426		1.79	1.331
	2.50	1.323		2.00	1.373		1.55	1.473		2.01	1.455		1.69	1.353
	2.22	1.369		1.82	1.400	17	3.00	1.271		1.80	1.488		1.50	1.392
	1.99	1.407		1.60	1.438		2.48	1.334	30	2.99	1.306	21	2.50	1.170
22	3.02	1.174	4	2.20	1.354		2.20	1.378		2.48	1.376		1.99	1.228
	2.50	1.255		2.01	1.388		2.00	1.407		2.20	1.416		1.80	1.293
	2.00	1.326		1.80	1.426		1.80	1.430		1.98	1.446		1.70	1.339
	1.80	1.377		1.70	1.445	18	5.03	1.116		1.80	1.478		1.50	1.367
	1.60	1.430		1.60	1.463		4.18	1.183	July 2	2.99	1.195	22	3.01	1.176
23	2.28	1.303	5	2.50	1.272		3.00	1.311		2.50	1.258		2.49	1.257
	2.00	1.360		2.01	1.356		2.50	1.369		2.05	1.307		2.00	1.248
	1.80	1.392		1.80	1.396		2.00	1.433		2.00	1.331		1.70	1.412
	1.70	1.407		1.70	1.400		1.55	1.495		1.89	1.367		1.50	1.456
	1.51	1.444		1.60	1.425	19	3.01	1.268	5	3.01	1.232	23	2.50	1.230
24	2.52	1.257	6	2.96	1.188		2.50	1.337		2.49	1.297		2.00	1.296
	2.01	1.347		2.50	1.257		2.00	1.418		2.00	1.380		1.88	1.317
	1.78	1.384		2.00	1.334		1.81	1.442		1.78	1.415		1.64	1.361
	1.60	1.404		1.80	1.364		1.60	1.473		1.69	1.444	24	2.50	1.195
	1.50	1.431		1.60	1.403	20	5.01	0.983	6	3.06	1.182		1.99	1.293
25	2.89	1.217	7	2.50	1.265		4.16	1.061		2.49	1.273		1.84	1.317
	2.51	1.277		2.20	1.311		3.03	1.218		1.99	1.361		1.60	1.365
	2.00	1.347		2.00	1.345		2.49	1.311		1.78	1.399		1.54	1.378
	1.69	1.400		1.80	1.380		1.55	1.471		1.60	1.433	25	2.98	1.317
	1.50	1.439		1.60	1.412	21	3.01	1.311	7	2.92	1.240		2.50	1.374
26	4.93	1.006	9	3.03	1.186		2.50	1.369		2.49	1.298		2.00	1.449
	4.07	1.092		2.50	1.260		2.20	1.396		2.00	1.376		1.70	1.496
	3.00	1.208		2.21	1.311		2.00	1.416		1.80	1.410		1.50	1.527
	2.50	1.274		2.00	1.352		1.88	1.443		1.70	1.426	26	3.02	1.320
	2.00	1.357		1.80	1.389	22	2.99	1.270	9	3.01	1.294		2.50	1.380
	1.50	1.438	10	2.94	1.299		2.49	1.337		2.49	1.373		2.01	1.455
27	5.07	0.990		2.51	1.357		2.00	1.410		2.00	1.433		1.70	1.501
	4.18	1.083		2.00	1.428		1.80	1.435		1.80	1.462		1.50	1.530
	3.00	1.220		1.80	1.455		1.59	1.465		1.61	1.490	29	3.00	1.288
	2.50	1.297		1.60	1.487	23	3.00	1.333	11	2.20	1.314		2.50	1.356
	2.00	1.368	11	3.00	1.264		2.51	1.386		1.99	1.349		2.00	1.432
	1.50	1.459		2.49	1.326		2.00	1.458		1.80	1.383		1.50	1.502
28	2.07	1.342		2.20	1.369		1.80	1.479		1.65	1.412	30	4.99	1.046
	1.97	1.358		2.00	1.399		1.60	1.508	14	2.11	1.441		4.10	1.135
	1.71	1.388		1.80	1.435	24	3.03	1.304		1.93	1.471		3.01	1.256
	1.61	1.405	12	4.89	1.108		2.52	1.371		1.68	1.487		2.48	1.327
	1.58	1.412		4.08	1.178		2.00	1.427		1.60	1.498		1.99	1.405
29	2.99	1.167		3.00	1.293		1.80	1.466	15	2.43	1.389		1.50	1.492
	2.50	1.250		2.50	1.345		1.60	1.487		1.97	1.453	Aug. 2	1.79	1.407
	2.00	1.321		2.01	1.413	25	5.02	1.186		1.81	1.477		1.70	1.426
				1.52	1.485		4.18	1.250					1.62	1.442

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1928—*Cont'd*		
Aug. 5	2.17	1.228
	1.93	1.264
	1.77	1.293
	1.61	1.328
	1.51	1.352
6	2.49	1.217
	2.00	1.302
	1.80	1.337
	1.60	1.380
	1.50	1.412
7	5.00	1.054
	4.10	1.140
	3.01	1.254
	2.49	1.318
	2.00	1.405
	1.50	1.496
8	4.97	1.130
	4.13	1.207
	3.00	1.339
	2.50	1.394
	2.00	1.468
	1.51	1.541
9	5.01	1.089
	4.10	1.198
	3.00	1.307
	2.49	1.374
	2.00	1.443
	1.45	1.532
10	3.00	1.274
	2.50	1.345
	2.01	1.422
	1.68	1.479
	1.51	1.513
11	2.98	1.252
	2.50	1.316
	2.00	1.400
	1.70	1.449
	1.50	1.483
13	3.00	1.236
	2.51	1.299
	2.00	1.380
	1.70	1.418
	1.50	1.461
14	1.70	1.330
	1.50	1.390
16	2.50	0.971
	2.00	1.078
	1.80	1.118
	1.70	1.154
	1.59	1.178
19	3.00	1.301
	2.49	1.362
	2.00	1.436
	1.70	1.468
	1.55	1.482
20	4.99	1.126
	4.06	1.239
	3.02	1.312
	2.48	1.385
	1.99	1.453
	1.50	1.530
21	4.96	1.155
	4.05	1.265
	3.00	1.353
	2.50	1.422
Aug. 21	2.00	1.492
	1.50	1.561
22	4.95	1.045
	4.03	1.136
	3.01	1.249
	2.50	1.320
	1.99	1.418
	1.50	1.494
24	3.00	1.004
	1.37	1.338
	1.33	1.345
25	1.98	1.311
	1.79	1.391
	1.66	1.413
	1.55	1.451
	1.45	1.475
29	3.00	1.226
	2.50	1.294
	2.00	1.357
	1.70	1.408
	1.50	1.454
30	5.07	0.986
	4.11	1.071
	3.00	1.212
	2.51	1.294
	2.02	1.375
	1.50	1.465
31	5.01	0.795
	4.06	0.896
	3.00	1.029
	2.50	1.133
	1.99	1.211
	1.50	1.374
Sept. 1	3.02	1.288
	2.49	1.350
	2.00	1.413
	1.80	1.438
	1.50	1.493
2	1.70	1.492
	1.60	1.509
	1.50	1.535
	1.40	1.558
	1.35	1.566
6	2.98	1.271
	2.48	1.342
	2.00	1.415
	1.71	1.469
	1.49	1.507
7	3.00	1.258
	2.51	1.324
	2.00	1.399
	1.70	1.445
	1.40	1.522
8	2.97	1.261
	2.48	1.330
	1.98	1.405
	1.69	1.445
	1.50	1.482
9	2.50	1.333
	2.00	1.403
	1.70	1.449
	1.50	1.485
	1.40	1.503
10	4.94	0.903
	4.01	1.004
Sept. 10	2.96	1.135
	2.50	1.218
	1.99	1.308
	1.50	1.419
13	5.03	1.108
	4.06	1.200
	2.98	1.314
	2.48	1.388
	1.99	1.465
	1.50	1.565
15	3.00	1.259
	2.50	1.326
	2.01	1.405
	1.70	1.462
	1.50	1.497
16	3.01	1.236
	2.49	1.295
	1.99	1.378
	1.70	1.439
	1.50	1.485
17	4.93	1.107
	4.00	1.189
	3.00	1.299
	2.50	1.364
	2.01	1.446
	1.50	1.526
18	3.01	1.265
	2.51	1.344
	2.00	1.433
	1.72	1.478
	1.50	1.511
19	2.46	1.366
	1.95	1.433
	1.75	1.464
	1.60	1.487
	1.49	1.500
21	3.01	1.268
	2.48	1.356
	1.99	1.433
	1.68	1.496
	1.50	1.532
22	2.51	1.239
	2.01	1.324
	1.80	1.364
	1.60	1.401
	1.50	1.420
24	2.00	1.438
	1.79	1.456
	1.60	1.490
	1.50	1.505
	1.40	1.523
28	2.48	1.322
	2.00	1.404
	1.70	1.460
	1.50	1.498
	1.40	1.516
Oct. 1	4.97	1.139
	4.08	1.219
	3.00	1.298
	2.48	1.399
	2.02	1.463
	1.51	1.529
2	5.02	1.056
	4.10	1.134
	2.99	1.259
Oct. 2	2.50	1.322
	2.01	1.397
	1.51	1.508
3	2.48	1.366
	2.00	1.450
	1.80	1.487
	1.59	1.516
	1.49	1.541
4	4.97	1.094
	4.04	1.172
	3.00	1.304
	2.50	1.372
	2.00	1.469
	1.49	1.541
5	2.47	1.381
	1.99	1.449
	1.79	1.488
	1.59	1.531
	1.49	1.554
6	2.51	1.331
	2.00	1.416
	1.78	1.459
	1.59	1.493
	1.46	1.519
7	2.50	1.305
	2.01	1.384
	1.79	1.417
	1.60	1.443
	1.46	1.474
9	2.46	1.085
	2.00	1.200
	1.80	1.238
	1.60	1.280
	1.50	1.312
10	3.00	1.160
	2.48	1.229
	2.01	1.314
	1.51	1.429
11	2.49	1.286
	1.98	1.379
	1.79	1.414
	1.60	1.443
	1.50	1.475
12	1.79	1.289
	1.60	1.320
	1.50	1.321
	1.40	1.337
	1.30	1.357
17	2.50	1.321
	2.00	1.415
	1.80	1.454
	1.58	1.488
	1.50	1.516
18	2.98	1.266
	2.48	1.335
	1.98	1.418
	1.50	1.500
19	2.52	1.299
	2.02	1.391
	1.70	1.448
	1.50	1.487
	1.40	1.510
20	2.50	1.412
	2.02	1.485
	1.72	1.526
Oct. 20	1.51	1.556
	1.40	1.578
22	2.49	1.433
	2.00	1.510
	1.80	1.545
	1.60	1.579
	1.50	1.597
23	2.51	1.466
	2.00	1.542
	1.79	1.582
	1.60	1.616
	1.51	1.632
24	2.98	1.285
	2.50	1.336
	2.00	1.400
	1.50	1.515
25	2.51	1.445
	2.00	1.515
	1.71	1.553
	1.50	1.574
	1.40	1.593
26	4.99	1.056
	4.05	1.141
	3.00	1.271
	2.50	1.357
	2.00	1.446
	1.51	1.531
27	5.01	1.095
	4.10	1.181
	2.98	1.313
	2.50	1.381
	2.00	1.457
	1.50	1.541
28	2.01	1.467
	1.80	1.501
	1.61	1.543
	1.51	1.549
	1.41	1.569
29	1.91	1.478
	1.70	1.520
	1.53	1.547
	1.41	1.573
	1.31	1.593
30	1.70	1.517
	1.51	1.552
	1.41	1.567
	1.31	1.580
Nov. 4	1.31	1.567
	1.23	1.584
	1.16	1.598
	1.11	1.607
	1.07	1.617
7	2.03	1.421
	1.79	1.445
	1.60	1.538
	1.50	1.578
	1.40	1.606
8	2.00	1.438
	1.75	1.486
	1.59	1.516
	1.50	1.535
	1.40	1.556
9	2.52	1.352
	1.96	1.452
	1.69	1.500

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1928—*Cont'd*		
Nov. 9	1.50	1.536
	1.32	1.569
11	2.52	1.382
	1.99	1.465
	1.70	1.517
	1.49	1.561
	1.40	1.579
12	2.50	1.367
	2.01	1.451
	1.70	1.505
	1.50	1.531
	1.30	1.574
13	4.90	1.063
	4.03	1.148
	2.87	1.296
	2.50	1.344
	2.00	1.445
	1.49	1.531
16	3.00	1.332
	2.51	1.397
	1.99	1.475
	1.70	1.529
	1.50	1.571
17	3.02	1.296
	2.50	1.351
	2.00	1.433
	1.70	1.495
	1.50	1.545
18	1.99	1.447
	1.71	1.498
	1.60	1.519
	1.51	1.537
	1.41	1.554
19	2.01	1.399
	1.71	1.463
	1.50	1.514
	1.40	1.535
	1.30	1.551
23	2.53	1.163
	1.99	1.280
	1.70	1.347
	1.50	1.397
24	2.00	1.386
	1.68	1.453
	1.59	1.475
	1.50	1.509
	1.40	1.535
26	2.99	1.246
	2.51	1.318
	2.00	1.398
	1.49	1.505
27	1.61	1.476
	1.50	1.500
	1.40	1.521
	1.31	1.542
	1.20	1.567
29	2.00	1.407
	1.70	1.455
	1.59	1.479
	1.50	1.496
	1.40	1.518
Dec. 1	2.01	1.354
	1.70	1.408
	1.51	1.453
1928—*Cont'd*		
Dec. 1	1.40	1.481
	1.30	1.512
5	2.94	1.306
	2.49	1.372
	1.99	1.471
	1.69	1.525
	1.49	1.569
6	3.02	1.292
	2.52	1.364
	2.00	1.450
	1.70	1.504
	1.50	1.537
7	1.72	1.491
	1.55	1.520
	1.41	1.547
	1.32	1.565
	1.23	1.580
8	3.00	1.306
	2.50	1.374
	2.00	1.441
	1.71	1.496
	1.50	1.542
9	2.96	1.298
	2.49	1.375
	2.01	1.466
	1.69	1.522
	1.50	1.558
10	1.51	1.479
	1.38	1.515
	1.29	1.534
	1.22	1.541
	1.15	1.572
11	3.00	1.252
	2.49	1.322
	2.00	1.420
	1.70	1.477
	1.50	1.509
13	1.25	1.602
	1.17	1.639
	1.12	1.657
	1.08	1.670
	1.05	1.681
17	2.98	1.293
	2.50	1.352
	1.99	1.441
	1.50	1.518
21	2.46	1.228
	2.09	1.316
	1.80	1.395
	1.60	1.443
22	1.34	1.514
	1.25	1.528
	1.18	1.540
	1.13	1.551
	1.08	1.561
23	1.50	1.485
	1.40	1.322
	1.30	1.543
	1.20	1.570
	1.15	1.591
24	2.98	1.226
	2.50	1.287
	2.00	1.373
	1.70	1.425
	1.51	1.493
1928—*Cont'd*		
Dec. 25	1.30	1.543
	1.22	1.586
	1.17	1.607
	1.12	1.602
	1.08	1.621
27	1.37	1.501
	1.25	1.533
28	4.96	1.039
	4.10	1.126
	2.99	1.265
	2.48	1.335
	1.98	1.445
	1.50	1.519
29	1.70	1.426
	1.51	1.478
	1.40	1.506
	1.30	1.529
	1.23	1.563
30	4.98	1.102
	4.13	1.165
	2.97	1.323
	2.50	1.366
	2.00	1.446
	1.50	1.530
31	2.00	1.499
	1.70	1.544
	1.50	1.578
	1.40	1.595
	1.30	1.607
1929		
Jan. 1	3.00	1.277
	1.98	1.458
	1.49	1.552
2	5.00	1.053
	4.13	1.153
	2.99	1.298
	2.49	1.376
	2.00	1.452
	1.50	1.538
3	1.50	1.483
	1.40	1.501
	1.30	1.525
	1.25	1.537
	1.20	1.555
4	2.00	1.367
	1.69	1.427
	1.49	1.473
	1.39	1.496
	1.30	1.523
5	2.99	1.207
	2.48	1.274
	1.98	1.352
	1.70	1.416
	1.49	1.465
6	2.00	1.371
	1.70	1.423
	1.50	1.468
	1.40	1.487
	1.30	1.512
10	1.38	1.453
	1.28	1.480
	1.20	1.502
	1.14	1.519
	1.09	1.533
12	1.50	1.472
	1.40	1.495
1929—*Cont'd*		
Jan. 12	1.30	1.521
	1.20	1.548
	1.15	1.561
13	1.70	1.480
	1.50	1.517
	1.40	1.537
	1.30	1.559
	1.20	1.582
14	4.98	1.020
	4.11	1.100
	2.98	1.248
	2.48	1.324
	1.99	1.407
	1.49	1.518
15	2.00	1.397
	1.68	1.438
	1.50	1.482
	1.40	1.507
	1.30	1.530
16	2.01	1.342
	1.70	1.387
	1.38	1.472
	1.30	1.490
	1.20	1.515
17	2.01	1.330
	1.71	1.381
	1.50	1.429
	1.40	1.456
	1.30	1.483
19	2.01	1.400
	1.70	1.470
	1.51	1.511
	1.41	1.531
	1.30	1.555
20	2.00	1.366
	1.70	1.422
	1.50	1.467
	1.41	1.491
	1.30	1.512
21	1.30	1.502
	1.22	1.525
	1.15	1.542
	1.11	1.561
	1.08	1.576
22	1.30	1.490
	1.20	1.515
	1.15	1.528
	1.10	1.531
	1.07	1.538
23	1.99	1.357
	1.70	1.405
	1.50	1.441
	1.40	1.472
	1.30	1.496
24	2.00	1.409
	1.50	1.489
	1.40	1.502
	1.30	1.528
	1.25	1.542
26	1.59	1.435
	1.50	1.447
	1.40	1.470
	1.29	1.482
	1.20	1.507
1929—*Cont'd*		
Jan. 27	1.50	1.458
	1.40	1.482
	1.29	1.495
	1.19	1.521
	1.15	1.522
29	1.47	1.456
	1.34	1.490
	1.25	1.508
	1.17	1.519
	1.11	1.526
Feb. 4	1.11	1.490
	1.07	1.490
	1.05	1.506
	1.02	1.487
5	1.92	1.357
	1.71	1.415
	1.50	1.462
	1.40	1.487
	1.29	1.516
6	1.18	1.584
	1.12	1.595
	1.08	1.606
7	1.45	1.503
	1.38	1.528
	1.30	1.540
	1.23	1.554
	1.20	1.565
16	5.09	1.010
	4.16	1.085
	2.98	1.242
	2.47	1.319
	2.00	1.404
	1.50	1.507
17	5.08	1.006
	4.16	1.109
	3.00	1.257
	2.49	1.342
	2.00	1.418
	1.51	1.528
18	5.05	1.136
	4.13	1.224
	3.00	1.340
	2.49	1.411
	2.00	1.488
	1.50	1.563
19	2.01	1.479
	1.70	1.526
	1.51	1.558
	1.41	1.572
	1.30	1.602
20	2.98	1.298
	2.50	1.352
	2.01	1.444
	1.70	1.500
	1.50	1.524
21	4.98	1.084
	4.10	1.152
	3.00	1.289
	2.49	1.360
	2.00	1.446
	1.50	1.540
22	4.98	1.036
	4.09	1.101
	3.00	1.229
	2.51	1.300

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1929—*Cont'd*			**1929**—*Cont'd*			**1929**—*Cont'd*			**1929**—*Cont'd*			**1929**—*Cont'd*		
Feb. 22	1.99	1.382	Mar. 12	1.40	1.490	Apr. 4	2.00	1.443	Apr. 20	2.00	1.408	May 12	4.97	1.091
	1.50	1.498		1.30	1.509		1.78	1.473		1.50	1.480		4.15	1.169
23	1.30	1.521	13	2.00	1.383		1.62	1.493	21	2.20	1.327		3.00	1.292
	1.25	1.522		1.70	1.428		1.50	1.511		2.00	1.368		2.48	1.361
24	2.00	1.339		1.50	1.460		1.40	1.532		1.80	1.415		2.00	1.428
	1.70	1.393		1.40	1.481	5	2.51	1.366		1.59	1.447		1.50	1.503
	1.50	1.425		1.30	1.506		2.00	1.446		1.50	1.482	13	2.00	1.406
25	2.21	1.330	14	2.50	1.338		1.79	1.483	23	3.00	1.212		1.80	1.429
	2.00	1.364		2.00	1.436		1.63	1.507		2.49	1.282		1.55	1.462
	1.71	1.415		1.68	1.479		1.50	1.531		2.00	1.357		1.50	1.473
	1.50	1.452		1.50	1.506	6	2.50	1.347		1.71	1.410		1.43	1.487
	1.40	1.476		1.40	1.521		2.00	1.416		1.50	1.458	14	3.00	1.278
26	1.46	1.462	15	2.50	1.406		1.78	1.458	25	2.51	1.342		2.49	1.339
	1.35	1.491		2.00	1.487		1.62	1.490		2.02	1.415		2.00	1.433
	1.26	1.516		1.70	1.531		1.50	1.509		1.80	1.471		1.69	1.457
	1.19	1.530		1.50	1.562	7	2.50	1.314		1.59	1.507		1.50	1.505
	1.13	1.544		1.40	1.573		1.99	1.403		1.50	1.527	15	5.02	1.050
27	1.24	1.500	16	5.00	1.056		1.77	1.440	26	4.94	1.155		4.20	1.126
	1.19	1.510		4.10	1.142		1.58	1.470		4.09	1.225		3.03	1.246
	1.15	1.522		3.01	1.272		1.50	1.485		3.01	1.330		2.50	1.320
	1.11	1.535		2.50	1.339	8	4.99	1.022		2.50	1.390		2.00	1.399
	1.09	1.536		2.00	1.423		4.08	1.097		2.02	1.460		1.50	1.481
28	2.21	1.287		1.50	1.538		2.99	1.222		1.50	1.551	16	3.02	1.207
	2.00	1.314	17	2.49	1.369		2.52	1.277	28	2.00	1.494		2.48	1.291
	1.51	1.422		2.00	1.445		2.01	1.354		1.80	1.542		1.99	1.372
	1.40	1.440		1.80	1.471		1.50	1.450		1.59	1.572		1.79	1.406
	1.30	1.470		1.60	1.495	9	1.60	1.454		1.50	1.580		1.60	1.439
Mar. 1	1.70	1.436		1.50	1.518		1.50	1.463		1.42	1.595	17	4.96	0.995
	1.50	1.474	18	5.01	1.018		1.41	1.480	29	4.98	1.103		4.15	1.091
	1.40	1.496		4.11	1.107		1.34	1.504		4.14	1.212		3.00	1.222
	1.30	1.518		2.98	1.234		1.30	1.523		2.98	1.311		2.49	1.287
	1.20	1.541		2.50	1.293	11	2.48	1.293		2.51	1.387		2.00	1.365
2	1.70	1.463		2.00	1.374		2.00	1.364		2.00	1.463		1.50	1.452
	1.50	1.505		1.50	1.468		1.75	1.400		1.50	1.528	18	1.91	1.386
	1.39	1.502	19	2.50	1.291		1.50	1.435	30	4.96	1.037		1.80	1.409
	1.29	1.562		2.00	1.371		1.40	1.467		4.12	1.132		1.69	1.434
	1.21	1.576		1.80	1.406	13	2.29	1.386		3.00	1.257		1.60	1.453
3	2.21	1.342		1.60	1.441		1.99	1.437		2.50	1.312		1.50	1.456
	1.98	1.380		1.50	1.459		1.71	1.486		1.99	1.380	21	3.00	1.142
	1.70	1.429	21	2.00	1.379		1.50	1.519		1.50	1.466		2.50	1.222
	1.50	1.466		1.80	1.419		1.41	1.533	May 5	2.50	1.269		1.99	1.318
	1.40	1.487		1.60	1.461	14	2.48	1.324		2.21	1.315		1.79	1.359
6	1.50	1.460		1.50	1.482		2.22	1.362		2.00	1.353		1.60	1.398
	1.40	1.487		1.41	1.500		1.98	1.399		1.79	1.385	22	5.03	0.968
	1.30	1.509	22	1.99	1.387		1.78	1.440		1.70	1.405		4.20	1.059
	1.25	1.530		1.80	1.422	15	2.48	1.356	7	3.00	1.291		3.01	1.203
	1.20	1.541		1.60	1.469		2.00	1.432		1.99	1.423		2.50	1.271
7	2.21	1.382		1.51	1.492		1.80	1.465		1.68	1.473		2.00	1.342
	2.00	1.411		1.41	1.504		1.60	1.506		1.50	1.503		1.50	1.418
	1.70	1.470	27	1.90	1.409		1.50	1.501	8	5.01	0.955	23	2.97	1.225
	1.51	1.509		1.70	1.443	18	2.97	1.255		4.18	1.046		2.47	1.297
	1.41	1.529		1.51	1.471		2.50	1.330		3.00	1.175		1.70	1.418
10	2.22	1.335		1.40	1.479		2.00	1.403		2.50	1.259		1.61	1.435
	1.97	1.390		1.30	1.502		1.71	1.458		2.00	1.330	24	2.98	1.257
	1.69	1.431	29	1.81	1.381		1.50	1.495		1.50	1.420		2.49	1.320
	1.49	1.458		1.63	1.428	19	2.96	1.252	9	1.80	1.356		2.00	1.391
	1.39	1.472		1.50	1.451		2.49	1.323		1.70	1.380		1.80	1.422
11	2.00	1.393		1.40	1.470		2.01	1.401		1.59	1.409	25	3.00	1.254
	1.70	1.442		1.33	1.482		1.70	1.453		1.50	1.419		2.49	1.324
	1.50	1.483	Apr. 1	2.23	1.344		1.50	1.492		1.44	1.447		2.00	1.399
	1.30	1.518		1.97	1.390	20	5.00	1.028	10	3.01	1.246		1.80	1.430
12	1.99	1.376		1.74	1.434		4.13	1.118		2.50	1.312		1.60	1.463
	1.70	1.435		1.58	1.462		3.01	1.273		2.20	1.353	26	2.97	1.282
	1.50	1.470		1.46	1.470		2.48	1.331		2.01	1.386		2.49	1.336
										1.80	1.420		2.00	1.405

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1929—*Cont'd*		
May 26	1.80	1.434
	1.60	1.464
27	4.91	1.043
	4.13	1.122
	3.01	1.250
	2.49	1.320
	2.00	1.390
	1.50	1.472
29	2.98	1.246
	2.50	1.324
	2.00	1.402
	1.80	1.434
June 2	2.98	1.165
	2.50	1.240
	2.00	1.328
	1.80	1.355
	1.59	1.402
4	2.00	1.398
	1.80	1.432
	1.66	1.464
	1.60	1.472
5	3.00	1.316
	2.49	1.381
	1.99	1.450
	1.60	1.504
	1.55	1.510
6	2.98	1.238
	2.49	1.302
	1.60	1.445
	1.56	1.451
	1.52	1.458
7	3.00	1.269
	2.49	1.333
	2.20	1.377
	2.01	1.409
	1.80	1.443
8	2.95	1.287
	2.50	1.350
	2.21	1.392
	2.00	1.423
	1.80	1.455
9	2.99	1.302
	2.50	1.370
	2.20	1.416
	2.01	1.446
	1.80	1.479
10	3.00	1.291
	2.50	1.364
	2.20	1.405
	2.00	1.429
	1.80	1.458
11	2.99	1.335
	2.50	1.394
	2.21	1.438
	2.00	1.466
	1.80	1.489
12	5.06	0.923
	4.25	1.000
	2.99	1.160
	2.50	1.222
	2.00	1.319
	1.54	1.416
13	3.00	1.162
	2.52	1.254
	2.21	1.300
June 13	1.99	1.346
	1.80	1.375
14	5.01	1.046
	4.14	1.128
	3.00	1.259
	2.50	1.315
	2.00	1.403
	1.54	1.473
15	3.00	1.233
	2.48	1.306
	2.19	1.342
	2.00	1.378
	1.90	1.398
16	2.48	1.274
	2.20	1.312
	2.00	1.349
	1.89	1.357
	1.70	1.406
22	2.99	1.240
	2.50	1.294
	2.09	1.339
	1.70	1.426
	1.60	1.455
24	2.48	1.307
	2.20	1.346
	2.00	1.370
	1.88	1.380
	1.74	1.413
25	4.88	1.102
	4.10	1.174
	3.01	1.288
	2.50	1.350
	2.00	1.423
	1.54	1.472
26	4.93	1.080
	4.03	1.161
	3.00	1.276
	2.50	1.349
	2.00	1.437
	1.54	1.507
27	3.00	1.296
	2.00	1.429
	1.79	1.456
	1.70	1.475
28	5.03	1.044
	4.06	1.142
	3.01	1.255
	2.50	1.331
	2.00	1.396
	1.53	1.474
29	3.02	0.953
	2.50	1.036
	2.00	1.156
	1.86	1.203
	1.74	1.221
July 1	3.01	1.297
	2.50	1.359
	2.00	1.434
	1.80	1.460
	1.71	1.472
2	5.00	1.074
	4.23	1.151
	3.00	1.288
	2.50	1.347
	2.00	1.412
July 2	1.54	1.483
4	2.20	1.394
	2.00	1.423
	1.80	1.453
	1.70	1.468
	1.63	1.479
5	3.01	1.302
	2.50	1.348
	2.18	1.418
	2.00	1.433
	1.83	1.473
6	2.84	1.237
	2.39	1.319
	2.11	1.370
	1.94	1.397
7	3.00	1.197
	2.50	1.270
	2.21	1.321
	2.00	1.361
	1.81	1.399
8	4.98	1.036
	4.09	1.134
	2.99	1.243
	2.49	1.315
	1.99	1.392
	1.52	1.493
9	5.05	1.090
	4.08	1.185
	3.00	1.303
	2.51	1.361
	2.00	1.434
	1.52	1.518
10	5.01	1.123
	4.06	1.229
	2.99	1.342
	2.50	1.403
	2.00	1.466
	1.51	1.540
11	4.60	1.170
	3.80	1.242
	2.98	1.326
	2.50	1.389
	2.00	1.453
	1.50	1.532
12	2.50	1.354
	2.20	1.405
	1.99	1.426
	1.79	1.453
	1.63	1.506
15	2.98	1.294
	2.50	1.365
	2.00	1.441
	1.81	1.475
	1.58	1.514
17	3.00	0.992
	2.50	1.086
	2.00	1.153
	1.80	1.193
	1.60	1.234
18	2.99	1.148
	2.50	1.234
	1.99	1.314
	1.80	1.345
	1.60	1.399
19	3.00	1.185
July 19	2.50	1.259
	2.00	1.341
	1.80	1.385
	1.60	1.420
20	3.01	1.252
	2.52	1.325
	2.00	1.406
	1.80	1.443
	1.60	1.478
21	3.00	1.276
	2.50	1.356
	2.00	1.432
	1.80	1.462
	1.60	1.500
23	2.50	1.236
	2.06	1.293
	1.87	1.326
	1.61	1.363
	1.50	1.382
24	2.96	1.229
	2.49	1.303
	1.98	1.379
	1.78	1.413
	1.59	1.437
25	2.50	1.259
	2.00	1.331
	1.80	1.362
	1.61	1.393
	1.43	1.425
26	3.00	1.221
	2.50	1.292
	2.00	1.380
	1.80	1.403
	1.60	1.452
27	3.02	1.223
	2.50	1.286
	1.99	1.361
	1.78	1.405
	1.59	1.447
28	4.81	0.989
	3.90	1.062
	2.97	1.175
	2.50	1.248
	2.00	1.320
	1.49	1.412
29	2.98	1.336
	2.50	1.401
	1.99	1.474
	1.80	1.498
	1.60	1.522
30	5.01	1.060
	4.03	1.147
	3.01	1.263
	2.50	1.321
	1.99	1.399
	1.49	1.480
31	2.99	1.017
	2.50	1.094
	2.00	1.178
	1.80	1.238
	1.60	1.291
Aug. 11	1.68	1.326
	1.55	1.349
	1.48	1.365
	1.41	1.382
Aug. 11	1.37	1.396
14	1.52	1.493
	1.45	1.519
	1.39	1.528
15	2.41	1.354
	2.08	1.399
	1.86	1.435
	1.69	1.460
	1.56	1.485
16	3.02	1.348
	2.50	1.379
	2.00	1.423
	1.48	1.418
17	1.99	1.374
	1.72	1.424
	1.50	1.455
	1.40	1.474
	1.33	1.487
18	3.04	1.240
	2.49	1.312
	2.00	1.382
	1.70	1.436
	1.50	1.467
19	2.93	1.271
	2.49	1.344
	2.00	1.398
	1.70	1.459
	1.50	1.487
20	3.00	1.257
	2.49	1.327
	2.00	1.387
23	2.49	1.343
	2.00	1.418
	1.71	1.469
	1.50	1.496
	1.41	1.509
24	2.48	1.336
	2.00	1.415
	1.70	1.465
	1.50	1.502
	1.40	1.519
25	2.47	1.306
	1.98	1.387
	1.79	1.425
	1.56	1.464
	1.50	1.472
26	4.87	1.153
	3.88	1.271
	3.00	1.319
	2.50	1.393
	2.00	1.460
	1.50	1.542
30	1.95	1.215
	1.79	1.299
31	2.25	1.232
	1.99	1.275
	1.79	1.317
	1.50	1.387
	1.40	1.426
Sept. 1	1.49	1.524
	1.39	1.540
	1.31	1.549
	1.27	1.555
	1.24	1.566
5	2.19	1.238

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1929—*Cont'd*		
Sept. 5	1.97	1.296
	1.74	1.356
8	1.95	1.356
	1.50	1.367
	1.41	1.372
	1.35	1.375
9	2.15	1.395
	1.95	1.431
	1.77	1.468
	1.66	1.480
	1.50	1.523
11	2.20	1.418
	2.00	1.437
	1.85	1.447
	1.68	1.488
	1.50	1.536
12	2.16	1.394
	1.97	1.408
	1.80	1.442
	1.68	1.468
	1.50	1.524
13	2.47	1.360
	1.97	1.426
	1.83	1.447
	1.66	1.479
	1.50	1.514
14	2.47	1.319
	1.98	1.416
	1.82	1.464
	1.69	1.481
	1.49	1.518
15	1.17	1.546
	1.15	1.550
	1.14	1.553
17	2.00	1.305
	1.83	1.351
	1.65	1.362
	1.50	1.350
	1.40	1.340
18	2.50	1.171
	2.00	1.262
	1.80	1.293
	1.60	1.325
	1.50	1.349
21	1.18	1.299
	1.17	1.317
	1.14	1.323
	1.13	1.330
	1.12	1.339
25	2.48	1.360
	2.00	1.333
	1.80	1.378
	1.60	1.498
	1.50	1.519
26	2.03	1.264
	1.50	1.394
27	2.50	1.120
	2.00	1.231
	1.80	1.270
	1.60	1.298
	1.50	1.328
28	1.50	1.349
	1.45	1.357
	1.37	1.376
	1.34	1.402
Sept. 28	1.28	1.405
29	2.48	1.172
	2.00	1.296
	1.80	1.332
	1.60	1.352
	1.50	1.349
Oct. 1	2.50	1.434
	2.01	1.510
	1.81	1.539
	1.60	1.554
	1.50	1.564
2	2.50	1.385
	2.01	1.458
	1.80	1.475
	1.60	1.526
	1.50	1.571
3	1.89	1.273
	1.72	1.308
	1.57	1.354
	1.46	1.380
	1.37	1.406
4	2.50	1.366
	2.03	1.441
	1.80	1.478
	1.60	1.521
	1.50	1.541
5	2.48	1.351
	2.01	1.446
	1.80	1.472
	1.60	1.505
	1.50	1.526
6	2.50	1.298
	2.00	1.378
	1.80	1.414
	1.60	1.444
	1.50	1.456
7	2.50	1.238
	2.01	1.353
	1.80	1.369
	1.60	1.392
	1.50	1.408
8	2.50	1.142
	2,00	1.217
	1.80	1.243
	1.50	1.290
10	4.89	1.090
	4.02	1.173
	2.98	1.304
	2.50	1.369
	2.00	1.464
	1.50	1.544
11	2.00	1.450
	1.49	1.543
12	2.50	1.272
	2.00	1.343
	1.80	1.379
	1.60	1.425
	1.50	1.429
16	2.50	1.206
	2.00	1.302
	1.80	1.334
	1.60	1.385
	1.50	1.411
18	1.80	1.347
	1.60	1.395
Oct. 18	1.50	1.423
	1.41	1.464
21	2.49	1.209
	2.22	1.253
	2.00	1.282
	1.60	1.375
	1.50	1.391
23	1.20	1.353
24	2.50	1.240
	2.20	1.296
	2.00	1.342
	1.60	1.421
	1.50	1.441
25	2.50	1.313
	2.20	1.349
	2.00	1.377
	1.60	1.434
	1.50	1.462
26	5.00	1.020
	4.09	1.106
	2.98	1.258
	2.49	1.313
	2.00	1.397
	1.50	1.491
27	2.20	1.347
	2.00	1.380
	1.60	1.456
	1.50	1.471
	1.40	1.492
28	4.93	1.025
	4.04	1.123
	2.98	1.209
	2.50	1.301
	2.00	1.376
	1.50	1.477
29	2.20	1.367
	2.00	1.394
	1.60	1.475
	1.50	1.493
	1.36	1.505
30	1.60	1.481
	1.50	1.524
	1.40	1.539
	1.34	1.545
	1.29	1.552
Nov. 1	1.30	1.520
2	1.30	1.498
	1.25	1.526
	1.20	1.515
3	1.40	1.470
	1.35	1.469
	1.30	1.487
	1.25	1.513
	1.20	1.507
4	1.40	1.413
5	2.00	1.349
	1.71	1.405
	1.59	1.437
	1.50	1.460
	1.39	1.483
6	1.02	1.641
7	1.55	1.526
	1.48	1.524
	1.43	1.542
	1.30	1.563
Nov. 7	1.25	1.586
9	1.31	1.471
	1.27	1.494
	1.22	1.503
	1.16	1.533
	1.12	1.536
10	1.70	1.539
	1.60	1.559
	1.50	1.601
	1.40	1.595
	1.37	1.606
11	4.87	1.068
	4.02	1.135
	2.98	1.260
	2.46	1.350
	2.00	1.434
	1.50	1.531
13	2.00	1.487
	1.70	1.526
	1.60	1.551
	1.50	1.557
	1.40	1.587
17	1.44	1.545
	1.38	1.567
	1.26	1.578
	1.22	1.586
	1.18	1.596
19	2.00	1.492
	1.80	1.530
	1.60	1.560
	1.35	1.620
	1.29	1.628
20	4.55	1.047
	3.85	1.125
	2.95	1.242
	2.49	1.311
	2.00	1.392
	1.50	1.501
21	4.67	1.062
	3.88	1.136
	2.97	1.275
	2.49	1.338
	2.00	1.420
	1.50	1.511
22	1.71	1.544
	1.59	1.567
	1.50	1.576
	1.40	1.593
	1.35	1.620
23	4.69	1.102
	3.89	1.212
	2.95	1.347
	2.49	1.390
	2.00	1.480
	1.50	1.569
24	1.02	1.636
	1.01	1.614
25	2.00	1.409
	1.80	1.441
	1.60	1.464
	1.50	1.489
	1.40	1.508
27	2.00	1.438
	1.80	1.463
	1.60	1.496
Nov. 27	1.50	1.508
	1.40	1.550
28	2.10	1.408
	1.85	1.455
	1.66	1.490
	1.48	1.520
	1.36	1.540
30	2.00	1.394
	1.80	1.431
	1.60	1.480
	1.50	1.504
	1.40	1.524
Dec. 1	2.00	1.420
	1.80	1.454
	1.50	1.524
	1.40	1.532
	1.36	1.549
2	2.00	1.448
	1.80	1.481
	1.60	1.511
	1.50	1.534
	1.40	1.547
3	2.01	1.499
	1.78	1.536
	1.58	1.580
	1.43	1.607
	1.34	1.645
4	4.97	1.058
	4.09	1.135
	2.97	1.298
	2.50	1.366
	2.00	1.448
	1.50	1.545
5	2.00	1.427
	1.80	1.463
	1.60	1.492
	1.50	1.522
	1.40	1.539
6	4.55	1.005
	3.83	1.066
	2.94	1.191
	2.49	1.264
	2.00	1.361
	1.50	1.459
7	4.83	1.002
	4.01	1.093
	3.24	1.220
	2.51	1.306
	2.00	1.412
	1.50	1.505
8	1.70	1.471
	1.60	1.490
	1.50	1.516
	1.40	1.532
	1.35	1.562
10	1.80	1.441
	1.60	1.467
	1.50	1.493
	1.40	1.512
	1.35	1.536
11	2.00	1.488
	1.80	1.515
	1.60	1.547
	1.50	1.568

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1929—*Cont'd*			**1929**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*		
Dec. 11	1.40	1.596	Dec. 30	1.50	1.586	Jan. 17	2.00	1.447	Feb. 3	1.50	1.581	Feb. 19	1.05	1.554
12	4.47	1.119		1.40	1.623		1.80	1.490	4	4.87	1.099	20	1.33	1.540
	3.86	1.183	31	2.01	1.494		1.59	1.536		4.08	1.171		1.25	1.554
	2.89	1.305		1.70	1.553		1.50	1.558		3.00	1.315		1.19	1.565
	2.46	1.368		1.60	1.567		1.40	1.573		2.50	1.382		1.13	1.574
	1.97	1.431		1.50	1.577	18	4.90	1.121		2.00	1.473		1.11	1.588
	1.49	1.539		1.40	1.605		4.08	1.294		1.50	1.565	21	1.18	1.548
13	1.54	1.468	**1930**				2.95	1.314	5	2.20	1.428		1.15	1.569
	1.40	1.494	Jan. 1	1.70	1.486		2.49	1.382		2.00	1.461		1.13	1.559
	1.28	1.520		1.60	1.501		2.00	1.444		1.80	1.522		1.12	1.571
	1.20	1.538		1.51	1.513		1.50	1.537		1.60	1.534	25	2.20	1.387
	1.15	1.551		1.46	1.538	19	1.92	1.416		1.50	1.547		2.00	1.415
14	2.00	1.360		1.39	1.537		1.83	1.445	6	2.15	1.357		1.80	1.455
	1.80	1.405	4	1.67	1.420		1.60	1.482		1.85	1.417		1.60	1.491
	1.60	1.446		1.55	1.454		1.50	1.506		1.66	1.455		1.50	1.512
	1.50	1.462		1.44	1.477		1.40	1.522		1.50	1.491	26	1.11	1.584
	1.40	1.488	5	1.99	1.379	20	2.00	1.405		1.38	1.529		1.10	1.592
15	1.30	1.530		1.71	1.427		1.80	1.437	8	1.22	1.537		1.09	1.585
16	1.18	1.550		1.50	1.459		1.60	1.482		1.20	1.547		1.08	1.594
	1.15	1.551	6	1.03	1.598		1.50	1.516		1.15	1.549		1.07	1.594
	1.11	1.561		1.02	1.609		1.40	1.531		1.13	1.565	27	1.70	1.454
	1.09	1.569		1.01	1.602	21	2.00	1.401		1.10	1.569		1.60	1.470
	1.08	1.580		1.00	1.598		1.81	1.442	9	2.20	1.398		1.50	1.498
17	2.00	1.323	7	2.00	1.410		1.60	1.482		2.00	1.424		1.40	1.512
	1.81	1.365		1.80	1.452		1.50	1.498		1.80	1.465		1.36	1.512
	1.60	1.413		1.59	1.486		1.40	1.526		1.60	1.503	28	1.38	1.502
	1.50	1.461		1.50	1.510	23	2.00	1.357		1.50	1.521		1.34	1.526
	1.40	1.469		1.40	1.527		1.48	1.502	10	1.42	1.484		1.28	1.521
18	1.32	1.521	8	2.00	1.393		1.42	1.503		1.36	1.498		1.25	1.550
	1.26	1.530		1.81	1.423		1.33	1.536		1.32	1.494		1.20	1.551
	1.22	1.542		1.60	1.462		1.29	1.520		1.27	1.523	Mar. 1	2.49	1.292
	1.18	1.570		1.50	1.485	28	1.33	1.569		1.24	1.514		2.20	1.341
	1.15	1.567		1.40	1.505		1.29	1.576	11	2.20	1.360		2.00	1.379
19	2.00	1.429	9	1.06	1.588		1.24	1.589		2.00	1.408		1.80	1.419
	1.80	1.461		1.05	1.577		1.20	1.602		1.80	1.433		1.50	1.472
	1.60	1.502		1.03	1.596		1.16	1.608		1.60	1.484	3	2.00	1.380
	1.50	1.521		1.02	1.595	29	1.99	1.433		1.50	1.492		1.80	1.415
	1.40	1.542	10	2.00	1.405		1.81	1.463	14	4.98	1.111		1.60	1.456
20	4.91	1.119		1.80	1.447		1.60	1.506		4.02	1.195		1.50	1.477
	4.06	1.201		1.60	1.479		1.50	1.529		3.00	1.328		1.40	1.493
	2.97	1.334		1.50	1.505		1.40	1.549		2.49	1.402	5	2.15	1.306
	2.49	1.399		1.40	1.527	30	2.00	1.428		1.99	1.485	6	1.30	1.451
	2.00	1.481	11	2.00	1.369		1.81	1.448		1.50	1.562		1.25	1.464
	1.50	1.539		1.81	1.411		1.60	1.487	15	1.67	1.466		1.20	1.482
21	2.00	1.420		1.50	1.472		1.50	1.512		1.56	1.499		1.16	1.493
	1.80	1.463	12	2.00	1.370		1.40	1.528		1.50	1.506		1.13	1.536
	1.60	1.494		1.80	1.417	31	1.22	1.506		1.42	1.534	9	2.50	1.295
	1.50	1.521		1.60	1.463		1.18	1.541		1.37	1.546		2.21	1.345
	1.40	1.534		1.50	1.479		1.15	1.543	16	2.21	1.338		2.00	1.381
22	2.00	1.416		1.40	1.493		1.12	1.558		2.00	1.372		1.80	1.421
	1.81	1.456	14	2.00	1.357		1.10	1.550		1.66	1.412		1.50	1.477
	1.60	1.484		1.81	1.405	Feb. 1	1.19	1.555		1.23	1.519	10	2.20	1.388
	1.50	1.502		1.59	1.437		1.16	1.543		1.20	1.537		2.00	1.418
	1.40	1.531		1.50	1.369		1.13	1.558	17	1.25	1.479		1.80	1.463
26	1.60	1.472		1.40	1.482		1.11	1.561		1.21	1.492		1.60	1.504
	1.50	1.502	15	2.00	1.379	2	1.50	1.599		1.18	1.499		1.50	1.537
	1.40	1.512		1.81	1.427		1.40	1.621		1.15	1.526	11	5.00	1.071
	1.35	1.536		1.60	1.461		1.35	1.643		1.12	1.529		4.03	1.161
	1.30	1.536		1.50	1.482		1.26	1.658	18	1.60	1.401		3.00	1.290
29	2.00	1.344		1.40	1.499		1.23	1.670		1.50	1.437		2.50	1.341
	1.70	1.399	16	1.43	1.498	3	5.10	1.111		1.42	1.455		2.00	1.423
	1.50	1.438		1.37	1.528		4.17	1.211	19	1.10	1.549		1.50	1.524
30	2.00	1.504		1.26	1.551		3.01	1.343		1.09	1.553	12	5.05	1.131
	1.70	1.570		1.19	1.567		2.50	1.407		1.07	1.551		4.05	1.230
	1.60	1.594		1.14	1.581		1.99	1.503		1.06	1.567		3.01	1.346

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1930—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*		
Mar. 12	2.50	1.407	Mar. 28	3.00	1.298	Apr. 10	2.00	1.445	Apr. 24	2.21	1.368	May 8	1.50	1.499
	1.99	1.488		2.51	1.353		1.50	1.523		2.00	1.402	9	3.01	1.261
	1.50	1.566		2.00	1.428	11	4.86	1.055		1.90	1.428		2.51	1.329
13	2.20	1.338		1.50	1.521		4.01	1.141	26	2.00	1.423		2.00	1.405
	2.01	1.380	29	4.82	1.109		3.03	1.264		1.69	1.487		1.90	1.437
	1.67	1.453		3.98	1.194		2.50	1.333		1.63	1.491		1.50	1.493
	1.59	1.448		3.02	1.300		2.00	1.408		1.54	1.505	10	1.78	1.376
	1.50	1.464		2.50	1.376		1.50	1.502		1.50	1.504		1.68	1.397
14	2.98	1.261		1.99	1.446	12	3.01	1.292	27	3.01	1.290		1.63	1.405
	2.51	1.330		1.50	1.527		2.51	1.352		2.51	1.363		1.53	1.430
	2.00	1.418	30	2.49	1.368		2.01	1.437		2.00	1.424		1.50	1.436
	1.80	1.445		2.20	1.407		1.90	1.464		1.90	1.428	12	1.76	1.412
	1.50	1.503		2.00	1.441		1.50	1.531		1.50	1.519		1.68	1.423
17	1.39	1.458		1.66	1.501	13	3.03	1.357	28	3.00	1.281		1.63	1.443
	1.35	1.467		1.59	1.511		2.50	1.420		2.49	1.347		1.52	1.460
	1.19	1.505	31	3.02	1.245		2.00	1.484		2.00	1.415		1.50	1.453
18	3.02	1.254		2.75	1.286		1.90	1.505		1.90	1.437	13	1.78	1.418
	2.51	1.319		1.70	1.454		1.50	1.561		1.50	1.504		1.70	1.436
	2.33	1.346		1.60	1.461	15	3.03	1.271	29	3.02	1.231		1.64	1.445
	2.00	1.398		1.50	1.488		2.50	1.347		2.50	1.300		1.53	1.483
	1.89	1.435	Apr. 1	3.03	1.289		2.00	1.429		2.00	1.377		1.50	1.475
19	2.74	1.185		2.51	1.360		1.90	1.447		1.90	1.398	14	3.01	1.248
	2.27	1.268		2.00	1.434		1.50	1.512		1.50	1.466		2.50	1.311
	2.00	1.320		1.81	1.454	16	3.02	1.256	30	3.01	1.258		2.01	1.388
	1.80	1.338		1.50	1.523		2.50	1.316		2.50	1.332		1.91	1.412
	1.72	1.369	2	2.20	1.341		2.00	1.400		2.00	1.401		1.50	1.468
21	3.03	1.197		2.00	1.379		1.90	1.424		1.90	1.422	15	1.50	1.443
	2.50	1.275		1.90	1.408		1.50	1.485		1.50	1.494		1.46	1.447
	2.00	1.353	4	3.01	1.218	17	3.06	1.215	May 1	3.01	1.251		1.43	1.453
	1.81	1.390		2.50	1.289		2.51	1.287		2.50	1.321		1.41	1.460
	1.50	1.446		2.00	1.372		2.20	1.332		2.20	1.365		1.41	1.459
22	1.60	1.426		1.80	1.405		1.97	1.361		1.96	1.395	16	3.00	1.257
	1.50	1.439		1.50	1.454		1.50	1.455	2	3.02	1.258		2.49	1.304
	1.40	1.471	5	3.03	1.239	18	3.03	1.188		2.50	1.318		2.35	1.337
	1.34	1.485		2.49	1.318		2.51	1.265		2.00	1.412		2.00	1.392
	1.31	1.492		2.00	1.398		2.00	1.348		1.91	1.422		1.91	1.408
23	3.02	1.219		1.80	1.446		1.90	1.366		1.50	1.485	17	3.02	1.267
	2.51	1.293		1.50	1.499		1.50	1.451	3	3.01	1.276		2.51	1.335
	2.00	1.374	6	3.01	1.308	19	3.01	1.195		2.50	1.344		2.36	1.350
	1.81	1.414		2.50	1.380		2.50	1.264		2.00	1.419		2.01	1.410
	1.70	1.431		2.00	1.458		2.00	1.359		1.90	1.442		1.91	1.421
24	4.80	1.069		1.90	1.483		1.90	1.378		1.50	1.506	18	3.00	1.248
	3.96	1.145		1.50	1.533		1.50	1.472	4	3.00	1.297		2.50	1.328
	3.01	1.252	7	4.87	1.121	20	3.03	1.207		2.50	1.357		2.36	1.334
	2.51	1.308		4.01	1.206		2.51	1.282		2.00	1.400		2.10	1.379
	1.91	1.404		3.03	1.311		2.20	1.329		1.90	1.446		2.00	1.390
	1.45	1.477		2.49	1.373		2.01	1.362		1.50	1.522	19	3.00	1.269
25	1.16	1.536		2.00	1.450		1.91	1.376	5	3.01	1.280		2.50	1.352
	1.15	1.549		1.50	1.517	21	1.50	1.427		2.50	1.348		2.10	1.427
	1.14	1.541	8	4.82	1.169		1.47	1.440		2.00	1.420		2.00	1.437
	1.13	1.524		3.97	1.243		1.40	1.454		1.90	1.435		1.50	1.519
	1.13	1.529		3.01	1.335		1.37	1.469		1.50	1.511	20	3.01	1.303
26	1.19	1.580		2.50	1.396		1.34	1.464	6	3.00	1.295		2.50	1.379
	1.17	1.587		2.00	1.479	22	3.00	1.236		2.50	1.361		2.10	1.444
	1.16	1.582		1.50	1.557		2.50	1.310		2.01	1.424		2.00	1.455
	1.15	1.605	9	4.86	1.113		2.00	1.383		1.91	1.455		1.50	1.527
	1.14	1.615		4.02	1.201		1.90	1.400		1.50	1.518	21	3.01	1.284
27	4.82	1.133		3.02	1.308		1.50	1.471	7	3.02	1.288		2.51	1.344
	3.98	1.205		2.49	1.375	23	3.02	1.232		1.75	1.480		2.10	1.400
	3.02	1.317		2.00	1.447		2.51	1.307		1.69	1.484		2.00	1.409
	2.50	1.383		1.50	1.539		2.00	1.390		1.62	1.494		1.50	1.512
	2.00	1.458	10	4.81	1.108		1.90	1.409	8	1.79	1.450	22	3.00	1.276
	1.50	1.523		3.99	1.195		1.50	1.489		1.69	1.475		2.50	1.354
28	4.78	1.097		3.01	1.311	24	3.01	1.260		1.64	1.468		2.10	1.405
	3.95	1.188		2.50	1.387		2.70	1.307		1.53	1.484		2.00	1.425

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1930—*Cont'd*		
May 22	1.50	1.507
23	4.91	1.066
	4.12	1.146
	2.99	1.278
	2.50	1.348
	1.99	1.411
	1.50	1.475
24	3.00	1.285
	2.50	1.357
	2.21	1.397
	2.00	1.423
	1.50	1.506
25	2.99	1.281
	2.49	1.341
	2.20	1.392
	2.00	1.416
	1.50	1.495
26	3.01	1.287
	2.50	1.353
	2.20	1.399
	2.00	1.414
	1.50	1.498
28	1.56	1.488
	1.52	1.488
	1.49	1.491
	1.48	1.492
29	2.07	1.459
	1.95	1.447
	1.89	1.464
	1.80	1.461
	1.75	1.440
30	1.89	1.426
	1.83	1.438
	1.72	1.456
	1.68	1.470
	1.61	1.476
31	2.30	1.373
	2.09	1.402
	1.93	1.431
	1.77	1.461
	1.68	1.477
June 1	2.77	1.311
	2.42	1.365
	2.16	1.401
	1.97	1.433
	1.83	1.458
2	3.01	1.301
	2.51	1.372
	2,21	1.414
	2.00	1.437
	1.93	1.455
3	3.00	1.326
	2.50	1.391
	2.20	1.425
	2.00	1.454
	1.93	1.485
5	2.30	1.393
	2.19	1.411
	1.60	1.492
	1.58	1.506
	1.55	1.501
6	1.62	1.500
	1.60	1.493
	1.56	1.498
	1.55	1.512
June 6	1.53	1.506
7	4.88	1.094
	4.25	1.172
	3.56	1.227
	3.00	1.288
	2.50	1.355
	2.00	1.423
8	3.01	1.281
	2.50	1.337
	2.20	1.387
	1.99	1.421
	1.92	1.447
9	4.88	1.079
	4.22	1.141
	3.55	1.203
	2.99	1.269
	2.50	1.319
	2.00	1.402
10	4.91	1.066
	4.25	1.132
	3.56	1.203
	3.00	1.270
	2.50	1.331
	1.99	1.411
11	3.01	1.206
	2.50	1.290
	2.21	1.326
	2.00	1.350
	1.93	1.353
12	1.80	1.400
	1.72	1.411
	1.64	1.423
	1.59	1.431
	1.55	1.439
13	4.90	1.138
	4.25	1.198
	3.56	1.260
	3.00	1.322
	2.50	1.383
	2.00	1.461
14	1.70	1.501
	1.67	1.507
	1.63	1.513
	1.60	1.518
	1.58	1.533
15	3.02	1.257
	2.51	1.322
	2.20	1.376
	2.00	1.398
	1.93	1.402
16	3.00	1.345
	2.50	1.408
	2.21	1.454
	2.00	1.481
	1.93	1.485
17	3.01	1.301
	2.50	1.360
	2.37	1.388
	2.20	1.411
	2.00	1.431
18	4.90	1.076
	4.25	1.159
	3.58	1.217
	2.97	1.281
	2.50	1.359
June 18	2.00	1.444
19	2.21	1.398
	2.04	1.433
	1.96	1.424
	1.87	1.445
	1.81	1.451
20	5.07	1.064
	4.38	1.141
	3.67	1.186
	3.05	1.261
	2.51	1.335
	2.00	1.417
22	1.63	1.370
	1.60	1.380
	1.57	1.369
	1.55	1.392
	1.54	1.412
23	2.24	1.256
	2.09	1.287
	2.01	1.292
	1.89	1.326
	1.84	1.333
25	2.46	1.300
	2.21	1.343
	2.12	1.367
	2.00	1.382
	1.93	1.399
26	3.00	1.201
	2.60	1.264
	2.35	1.300
	2.13	1.335
	1.93	1.367
27	1.85	1.356
	1.75	1.381
	1.68	1.399
	1.62	1.402
	1.58	1.405
28	3.00	1.149
	2.79	1.182
	2.50	1.225
	2.20	1.274
	2.00	1.304
29	3.00	1.133
	2.50	1.209
	2.20	1.256
	2.00	1.295
	1.93	1.316
30	2.15	1.339
	2.00	1.360
	1.93	1.373
	1.84	1.385
	1.80	1.382
July 1	3.02	1.235
	2.51	1.306
	2.20	1.348
	2.00	1.376
	1.93	1.396
2	2.15	1.385
	2.03	1.408
	1.94	1.413
	1.84	1.424
	1.78	1.452
3	4.88	1.118
	4.25	1.177
	3.56	1.238
July 3	3.00	1.286
	2.51	1.360
	2.00	1.422
4	4.89	1.064
	4.26	1.139
	3.57	1.209
	3.00	1.271
	2.50	1.330
	2.00	1.415
5	3.00	1.283
	2.51	1.341
	2.37	1.382
	2.21	1.393
	2.00	1.414
6	3.01	1.319
	2.50	1.376
	2.37	1.397
	2.20	1.414
	2.00	1.444
7	3.00	1.248
	2.50	1.311
	2.37	1.324
	2.00	1.395
	1.93	1.410
8	3.01	1.240
	2.50	1.311
	2.20	1.349
	2.00	1.376
	1.93	1.385
9	3.00	1.219
	2.50	1.292
	2.20	1.335
	2.00	1.381
	1.93	1.391
10	1.93	1.295
	1.84	1.311
	1.73	1.331
	1.65	1.344
	1.58	1.349
11	2.52	1.094
	2.39	1.133
	2.25	1.164
	2.06	1.198
	1.98	1.220
13	3.00	1.132
	2.50	1.215
	2.20	1.272
	1.99	1.310
	1.92	1.316
14	3.02	1.181
	2.50	1.269
	2.21	1.314
	2.00	1.348
	1.92	1.359
15	3.01	1.302
	2.50	1.366
	2.20	1.392
	2.00	1.425
	1.87	1.443
16	3.00	0.922
	2.50	0.996
	2.20	1.076
	2.00	1.106
	1.93	1.108
20	3.01	0.921
July 20	2.79	0.960
	2.50	1.010
	2.36	1.050
	2.10	1.098
21	3.00	1.016
	2.51	1.102
	2.19	1.166
	2.00	1.202
	1.92	1.218
23	1.54	1.247
	1.51	1.258
	1.47	1.264
	1.46	1.273
	1.45	1.271
24	3.00	1.069
	2.55	1.139
	2.26	1.189
	2.03	1.243
	1.88	1.279
25	3.00	1.129
	2.50	1.209
	2.20	1.267
	2.00	1.295
	1.92	1.317
26	2.99	1.184
	2.51	1.252
	2.00	1.333
	1.92	1.348
	1.80	1.367
27	2.99	1.220
	2.51	1.293
	2.20	1.346
	2.00	1.388
	1.92	1.426
28	4.86	1.101
	4.07	1.176
	3.00	1.295
	2.50	1.360
	2.00	1.426
	1.50	1.505
29	3.01	1.313
	2.50	1.373
	2.00	1.438
	1.92	1.462
	1.50	1.516
30	2.00	1.401
	1.92	1.421
	1.80	1.439
	1.75	1.462
	1.50	1.481
Aug. 3	2.00	1.278
	1.91	1.301
	1.80	1.318
	1.74	1.329
	1.65	1.362
4	2.99	1.223
	2.50	1.284
	2.00	1.361
	1.91	1.388
	1.50	1.453
5	4.82	1.052
	4.10	1.126
	3.00	1.245
	2.50	1.313
	2.00	1.392

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1930—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*			**1930**—*Cont'd*		
Aug. 5	1.50	1.480	Aug. 23	1.28	1.553	Sept. 6	1.87	1.362	Sept. 22	1.89	1.405	Oct. 11	1.07	1.618
6	4.88	1.084	24	2.16	1.379		1.78	1.381		1.50	1.487		1.06	1.615
	4.06	1.154		2.00	1.411		1.69	1.394	23	5.04	1.038	12	2.51	1.350
	3.00	1.286		1.90	1.423		1.50	1.442		4.12	1.122		2.00	1.431
	2.50	1.338		1.59	1.464		1.45	1.436		3.02	1.254		1.80	1.463
	2.00	1.408		1.50	1.469	7	2.00	1.144		2.49	1.350		1.60	1.495
	1.50	1.484	25	4.85	1.063		1.90	1.139		1.99	1.434		1.50	1.502
7	2.53	1.372		4.02	1.144		1.60	1.230		1.50	1.502	13	4.99	1.080
	2.21	1.430		3.02	1.252		1.50	1.263	24	5.00	1.011		4.07	1.170
	2.00	1.461		2.50	1.313		1.45	1.277		4.08	1.093		3.00	1.292
	1.83	1.479		2.00	1.385	8	1.50	1.197		3.00	1.220		2.49	1.360
	1.68	1.504		1.50	1.464		1.46	1.207		2.50	1.285		1.99	1.435
8	2.69	1.252	26	1.27	1.500		1.40	1.240		2.00	1.368		1.50	1.523
	2.51	1.298		1.26	1.486		1.36	1.251		1.50	1.473	14	2.51	1.376
	2.00	1.364		1.25	1.523		1.30	1.263	25	3.00	1.321		2.00	1.448
	1.90	1.389		1.24	1.502	9	2.00	0.953		2.50	1.394		1.80	1.487
	1.77	1.407		1.25	1.497		1.90	0.985		2.00	1.462		1.60	1.517
9	3.00	1.260	27	3.04	1.261		1.60	1.059		1.89	1.494		1.50	1.536
	2.50	1.335		2.50	1.349		1.50	1.083		1.50	1.540	15	2.50	1.385
	2.00	1.407		2.00	1.425		1.46	1.106	27	1.41	1.500		2.00	1.470
	1.90	1.414		1.90	1.444	11	4.92	1.009		1.30	1.545		1.80	1.495
	1.50	1.480		1.50	1.515		4.05	1.091		1.21	1.572		1.60	1.538
12	2.49	1.320	28	4.82	1.128		3.00	1.207		1.19	1.575		1.50	1.542
	2.33	1.360		4.00	1.206		2.49	1.272	28	3.01	1.300	16	2.49	1.379
	2.00	1.387		3.03	1.290		2.00	1.340		2.50	1.373		2.19	1.424
	1.90	1.430		2.51	1.360		1.51	1.434		2.00	1.453		1.89	1.471
	1.54	1.462		2.00	1.447	12	4.97	0.976		1.80	1.481		1.70	1.500
13	3.00	1.260		1.50	1.533		4.07	1.069		1.50	1.522		1.50	1.533
	2.51	1.322	29	4.78	1.134		3.01	1.195	29	4.95	0.984	17	3.02	1.253
	2.00	1.405		3.99	1.207		2.50	1.268		4.06	1.085		2.50	1.317
	1.90	1.425		3.02	1.312		1.99	1.362		2.98	1.211		2.00	1.401
	1.50	1.488		2.50	1.388		1.50	1.464		2.51	1.265		1.50	1.491
16	3.00	0.892		2.00	1.447	13	2.00	1.448		2.00	1.349	18	2.51	1.297
	2.50	1.023		1.50	1.531		1.90	1.484		1.50	1.441		2.00	1.383
	2.00	1.176	30	1.67	1.339		1.60	1.547	30	2.51	1.285		1.80	1.428
	1.90	1.204		1.61	1.352		1.50	1.553		2.00	1.376		1.60	1.463
	1.50	1.326		1.53	1.353		1.45	1.565		1.80	1.414		1.50	1.482
17	1.33	1.163		1.49	1.357	14	2.50	1.414		1.60	1.463	19	2.50	1.223
	1.32	1.166		1.43	1.363		2.00	1.481		1.50	1.475		2.00	1.317
	1.31	1.184	31	4.77	1.145		1.90	1.505	Oct. 1	2.87	1.271		1.12	1.509
	1.30	1.176		3.97	1.229		1.60	1.531		2.51	1.320		1.10	1.528
19	3.01	1.206		3.01	1.321		1.50	1.562		2.00	1.409		1.08	1.534
	2.51	1.195		2.51	1.383	15	1.67	1.483		1.80	1.438	22	2.50	1.405
	2.00	1.283		2.01	1.455		1.60	1.508		1.50	1.502		2.21	1.447
	1.50	1.370		1.50	1.537		1.50	1.527	4	1.42	1.378		2.00	1.478
	1.47	1.408	Sept. 1	2.19	1.376		1.45	1.532		1.35	1.399		1.60	1.561
20	3.01	1.078		2.00	1.402		1.36	1.547		1.32	1.400		1.50	1.583
	2.50	1.193		1.90	1.425	19	2.49	1.272		1.28	1.395	23	2.20	1.350
	2.00	1.338		1.66	1.461		2.00	1.316	5	2.50	1.322		2.00	1.392
	1.90	1.397		1.50	1.493		1.89	1.354		2.00	1.429		1.60	1.476
	1.50	1.444	3	2.99	1.346		1.60	1.395		1.80	1.457		1.50	1.485
21	2.87	1.305		2.49	1.411		1.50	1.438		1.60	1.504		1.39	1.502
	2.45	1.361		2.00	1.480	20	3.00	1.190		1.50	1.525	24	2.20	1.299
	2.15	1.401		1.86	1.503		2.50	1.267	6	2.51	1.324		2.00	1.337
	1.92	1.443		1.50	1.560		2.00	1.365		2.00	1.395		1.60	1.402
	1.50	1.522	4	2.98	1.322		1.90	1.375		1.80	1.433		1.50	1.432
22	3.00	1.290		2.50	1.382		1.50	1.465		1.59	1.471		1.40	1.447
	2.50	1.336		2.16	1.423	21	3.00	1.271		1.50	1.494	25	2.00	1.198
	2.00	1.416		1.92	1.460		2.50	1.340	7	1.80	1.315		1.89	1.232
	1.90	1.454		1.72	1.492		2.00	1.427		1.71	1.340		1.60	1.299
	1.57	1.495	5	1.42	1.436		1.90	1.441		1.50	1.385		1.50	1.317
23	1.36	1.545		1.39	1.451		1.50	1.511		1.45	1.401		1.40	1.344
	1.33	1.554		1.34	1.470	22	2.99	1.221		1.37	1.426	27	1.32	1.326
	1.31	1.548		1.31	1.480		2.50	1.291	11	1.21	1.575		1.29	1.336
	1.29	1.562		1.28	1.478		2.00	1.379		1.19	1.595		1.20	1.345

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1930—*Cont'd*		
Oct. 27	1.17	1.365
	1.13	1.372
28	1.40	1.302
	1.36	1.337
	1.30	1.362
	1.26	1.395
	1.20	1.413
29	1.50	1.465
	1.45	1.492
	1.40	1.495
	1.22	1.512
	1.20	1.523
30	2.14	1.342
	1.87	1.398
	1.68	1.436
	1.53	1.467
	1.43	1.488
31	4.93	1.128
	4.05	1.209
	2.99	1.333
	2.51	1.392
	2.00	1.466
	1.50	1.555
Nov. 1	4.89	1.058
	4.01	1.142
	3.00	1.275
	2.50	1.344
	2.00	1.430
	1.50	1.520
2	2.20	1.414
	2.00	1.454
	1.80	1.489
	1.50	1.530
	1.34	1.568
3	4.83	1.087
	3.97	1.173
	2.98	1.295
	2.50	1.371
	2.00	1.442
	1.50	1.541
4	4.88	1.074
	4.02	1.157
	3.00	1.286
	2.50	1.345
	2.00	1.424
	1.50	1.515
5	4.85	1.045
	4.00	1.141
	3.00	1.251
	2.49	1.323
	2.00	1.414
	1.50	1.496
6	2.20	1.304
	2.00	1.347
	1.79	1.389
	1.59	1.433
	1.50	1.461
7	1.99	1.321
	1.81	1.359
	1.60	1.406
	1.50	1.422
	1.40	1.454
11	1.37	1.437
	1.12	1.493
	1.10	1.505
1930—*Cont'd*		
Nov. 11	1.08	1.511
	1.06	1.517
12	1.22	1.490
	1.19	1.501
	1.15	1.496
	1.13	1.516
	1.10	1.499
13	1.93	1.388
	1.72	1.430
	1.56	1.460
	1.44	1.488
	1.35	1.504
14	2.00	1.331
	1.80	1.376
	1.60	1.411
	1.50	1.426
	1.40	1.446
15	2.00	1.320
	1.80	1.379
	1.60	1.413
	1.50	1.446
	1.40	1.461
16	2.00	1.330
	1.80	1.374
	1.60	1.416
	1.50	1.429
	1.40	1.451
17	2.00	1.293
	1.79	1.336
	1.60	1.372
	1.50	1.390
	1.40	1.405
19	1.68	1.370
	1.61	1.396
	1.50	1.418
	1.40	1.441
	1.35	1.465
20	2.00	1.488
	1.80	1.527
	1.60	1.563
	1.50	1.570
	1.40	1.590
21	2.00	1.413
	1.80	1.455
	1.60	1.483
	1.50	1.508
	1.40	1.525
22	2.99	1.386
	2.49	1.442
	2.13	1.505
	2.00	1.522
	1.50	1.609
23	2.01	1.485
	1.80	1.519
	1.60	1.563
	1.50	1.571
	1.40	1.594
25	1.78	1.401
	1.69	1.411
	1.56	1.450
	1.50	1.471
26	2.00	1.292
	1.80	1.342
	1.60	1.389
	1.50	1.423
1930—*Cont'd*		
Nov. 26	1.40	1.452
27	2.03	1.301
	1.79	1.360
	1.63	1.404
	1.48	1.442
	1.37	1.480
28	2.00	1.455
	1.80	1.494
	1.60	1.537
	1.50	1.555
	1.40	1.580
29	2.00	1.388
	1.80	1.434
	1.60	1.477
	1.50	1.504
	1.40	1.532
30	1.09	1.644
	1.08	1.653
	1.06	1.654
	1.05	1.674
	1.03	1.654
Dec. 1	2.00	1.484
	1.81	1.521
	1.60	1.562
	1.50	1.573
	1.40	1.594
2	1.80	1.512
	1.60	1.542
	1.50	1.555
	1.40	1.567
	1.36	1.579
3	1.20	1.577
	1.17	1.582
	1.13	1.583
	1.11	1.606
	1.08	1.601
4	2.00	1.314
	1.79	1.354
	1.60	1.404
	1.50	1.418
	1.40	1.445
5	1.02	1.553
	1.01	1.563
	1.00	1.572
6	4.72	1.154
	3.93	1.223
	2.98	1.325
	2.50	1.417
	1.99	1.483
	1.50	1.561
7	2.00	1.530
	1.80	1.561
	1.60	1.594
	1.50	1.602
	1.40	1.626
8	4.75	0.958
	3.94	1.076
	2.99	1.205
	2.50	1.319
	2.00	1.391
	1.50	1.502
9	2.00	1.389
	1.80	1.419
	1.60	1.471
	1.40	1.511
1930—*Cont'd*		
Dec. 9	1.35	1.528
10	2.00	1.449
	1.80	1.482
	1.60	1.515
	1.50	1.543
	1.40	1.561
11	2.00	1.480
	1.78	1.514
	1.62	1.533
	1.48	1.561
	1.36	1.589
12	2.00	1.391
	1.80	1.414
	1.60	1.451
	1.50	1.464
	1.40	1.480
13	1.18	1.512
	1.15	1.523
	1.12	1.538
	1.08	1.531
	1.07	1.544
17	2.01	1.293
	1.80	1.344
	1.60	1.385
	1.50	1.408
	1.40	1.446
18	2.00	1.385
	1.80	1.435
	1.60	1.468
	1.50	1.481
	1.40	1.505
19	2.01	1.450
	1.80	1.485
	1.60	1.522
	1.50	1.539
	1.40	1.558
20	2.00	1.396
	1.80	1.436
	1.60	1.472
	1.50	1.490
	1.40	1.521
21	2.00	1.394
	1.80	1.432
	1.62	1.464
	1.49	1.488
	1.36	1.522
23	2.00	1.394
	1.79	1.431
	1.60	1.466
	1.50	1.488
	1.40	1.517
24	2.01	1.519
	1.80	1.544
	1.60	1.588
	1.50	1.613
	1.40	1.614
25	2.00	1.481
	1.80	1.509
	1.60	1.550
	1.50	1.560
	1.40	1.582
26	2.00	1.389
	1.80	1.415
	1.60	1.465
	1.50	1.492
1930—*Cont'd*		
Dec. 26	1.40	1.505
27	1.55	1.428
	1.49	1.443
	1.43	1.460
	1.04	1.546
	1.03	1.559
29	1.23	1.383
	1.20	1.407
	1.04	1.463
	1.03	1.479
	1.02	1.483
30	2.00	1.382
	1.80	1.413
	1.60	1.481
	1.50	1.487
	1.40	1.517
31	2.00	1.460
	1.80	1.488
	1.60	1.517
	1.50	1.539
	1.40	1.558
1931		
Jan. 1	1.80	1.458
	1.71	1.471
	1.60	1.502
	1.50	1.504
	1.40	1.535
2	1.91	1.398
	1.81	1.423
	1.60	1.459
	1.50	1.492
	1.40	1.505
3	1.90	1.528
	1.75	1.559
	1.54	1.590
	1.42	1.604
	1.34	1.617
4	1.90	1.495
	1.80	1.527
	1.60	1.556
	1.50	1.565
	1.40	1.586
6	1.90	1.366
	1.80	1.390
	1.60	1.430
	1.50	1.448
	1.40	1.465
8	1.34	1.466
	1.30	1.482
	1.25	1.470
	1.22	1.503
	1.18	1.505
9	1.60	1.431
	1.50	1.461
	1.40	1.471
	1.36	1.496
	1.29	1.503
10	1.60	1.424
	1.50	1.444
	1.40	1.471
	1.36	1.485
	1.29	1.496
11	1.33	1.458
	1.29	1.475
	1.24	1.473

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1931—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*		
Jan. 11	1.21	1.487	Feb. 2	1.08	1.499	Feb. 21	1.80	1.410	Mar. 9	1.50	1.460	Apr. 2	2.50	1.326
	1.16	1.494		1.06	1.492		1.60	1.446	10	2.51	1.293		2.00	1.410
16	1.01	1.568	3	2.00	1.319		1.50	1.465		2.20	1.348		1.80	1.441
17	1.20	1.599		1.80	1.374	22	2.20	1.284		1.99	1.382		1.50	1.478
	1.14	1.611		1.60	1.400		2.00	1.326		1.80	1.411	4	1.50	1.444
	1.09	1.613		1.50	1.442		1.80	1.355		1.50	1.458		1.45	1.464
	1.06	1.621		1.40	1.450		1.60	1.401	11	2.50	1.289		1.40	1.478
	1.05	1.635	4	1.80	1.377		1.50	1.420		2.20	1.335		1.36	1.472
18	2.02	1.366		1.60	1.407	24	1.25	1.471		2.00	1.365		1.32	1.503
	1.80	1.409		1.50	1.415		1.10	1.500		1.80	1.402	5	2.97	1.313
	1.64	1.455		1.40	1.461		1.09	1.509		1.50	1.451		2.49	1.387
	1.50	1.487		1.35	1.468		1.07	1.520	15	2.04	1.293		2.00	1.461
	1.38	1.527	5	1.99	1.359	25	2.50	1.264		1.82	1.325		1.80	1.477
19	2.02	1.362		1.81	1.394		2.20	1.314		1.65	1.360		1.50	1.531
	1.80	1.393		1.60	1.438		2.00	1.338		1.50	1.401	6	3.00	1.263
	1.67	1.434		1.50	1.454		1.80	1.371		1.40	1.414		2.50	1.328
	1.53	1.467		1.40	1.489		1.50	1.435	16	1.65	1.370		2.00	1.403
	1.40	1.489	6	2.00	1.315	27	2.50	1.278		1.52	1.401		1.80	1.416
20	2.04	1.316		1.80	1.363		2.20	1.323		1.42	1.415		1.50	1.477
	1.82	1.371		1.70	1.394		2.01	1.358		1.33	1.427	7	3.00	1.204
	1.65	1.409		1.60	1.403		1.80	1.393		1.25	1.448		2.48	1.275
	1.51	1.435		1.50	1.422		1.50	1.467	19	1.60	1.381		2.00	1.357
	1.40	1.458	7	1.68	1.380	28	2.00	1.286		1.47	1.411		1.80	1.378
21	2.02	1.351		1.60	1.407		1.80	1.323		1.35	1.435		1.49	1.441
	1.80	1.396		1.50	1.429		1.60	1.372		1.28	1.445	8	1.97	1.423
	1.64	1.427		1.40	1.475		1.50	1.393		1.24	1.463		1.80	1.449
	1.50	1.459		1.36	1.485		1.40	1.421	21	1.70	1.319		1.61	1.490
	1.40	1.482	8	2.00	1.410	Mar. 1	1.61	1.435		1.55	1.350		1.50	1.499
23	1.92	1.354		1.80	1.444		1.50	1.463		1.46	1.373		1.39	1.531
	1.73	1.389		1.70	1.464		1.45	1.487		1.36	1.399	9	2.98	1.280
	1.58	1.418		1.60	1.482		1.38	1.497		1.29	1.418		2.50	1.340
	1.46	1.449		1.47	1.507		1.34	1.515	24	1.96	1.292		2.00	1.414
	1.36	1.471	9	2.00	1.435	2	2.20	1.279		1.44	1.337		1.80	1.459
24	1.14	1.481		1.80	1.462		2.00	1.316		1.64	1.344		1.50	1.528
	1.10	1.493		1.60	1.499		1.80	1.364		1.51	1.366	10	3.01	1.264
	1.09	1.491		1.50	1.508		1.60	1.400		1.42	1.402		2.50	1.329
	1.01	1.504		1.40	1.539		1.50	1.420	25	3.07	1.144		2.01	1.401
26	2.00	1.295	10	2.20	1.416	3	1.09	1.508		2.56	1.220		1.80	1.449
	1.80	1.341		2.00	1.455		1.08	1.517		2.23	1.283		1.50	1.490
	1.60	1.382		1.60	1.542		1.07	1.521		2.00	1.334	11	3.00	1.307
	1.50	1.389		1.50	1.548		1.06	1.528		1.80	1.374		2.50	1.363
	1.40	1.422		1.40	1.575	4	2.00	1.317	26	1.73	1.364		2.01	1.423
27	2.00	1.364	11	2.19	1.400		1.81	1.357		1.59	1.392		1.80	1.464
	1.80	1.424		1.91	1.456		1.60	1.396		1.50	1.411		1.50	1.517
	1.60	1.422		1.72	1.492		1.50	1.418		1.42	1.427	12	3.05	1.352
	1.50	1.489		1.57	1.517		1.40	1.441		1.34	1.439		2.48	1.435
	1.40	1.506		1.45	1.537	5	2.50	1.272	27	1.20	1.460		2.01	1.498
28	2.00	1.375	12	2.21	1.344		2.20	1.316		1.16	1.461		1.80	1.522
	1.79	1.424		1.99	1.385		2.00	1.348		1.15	1.463		1.50	1.559
	1.60	1.469		1.81	1.400		1.80	1.383	28	2.28	1.254	13	3.03	1.281
	1.50	1.482		1.60	1.445		1.50	1.450		2.02	1.300		2.54	1.335
	1.40	1.500		1.50	1.459	6	1.27	1.473		1.83	1.343		2.37	1.358
29	2.01	1.342	15	1.80	1.322		1.24	1.479		1.69	1.369		1.99	1.411
	1.80	1.383		1.70	1.340		1.20	1.485		1.54	1.396		1.88	1.429
	1.60	1.427		1.60	1.359		1.18	1.508	31	1.50	1.482	14	2.20	1.385
	1.50	1.451		1.50	1.388		1.15	1.510		1.42	1.488		1.96	1.428
	1.40	1.477		1.40	1.418	7	2.50	1.269		1.35	1.509		1.89	1.433
31	2.01	1.287	18	2.20	1.326		1.60	1.427		1.31	1.508		1.76	1.466
	1.79	1.348	20	2.20	1.328		1.50	1.454		1.27	1.516		1.69	1.476
	1.60	1.404		1.99	1.367		1.40	1.464	Apr. 1	2.97	1.287	15	3.02	1.325
	1.50	1.436		1.81	1.393		1.35	1.481		2.49	1.376		2.50	1.401
	1.40	1.463		1.60	1.432	9	2.50	1.293		1.98	1.440		2.00	1.469
Feb. 2	1.15	1.463		1.50	1.461		2.20	1.342		1.80	1.463		1.80	1.501
	1.13	1.474	21	2.20	1.338		2.00	1.371		1.51	1.507		1.50	1.549
	1.10	1.473		2.00	1.368		1.80	1.407	2	2.98	1.251	16	4.86	1.042

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1931—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*		
Apr. 16	4.01	1.142	Apr. 29	1.50	1.497	May 13	1.66	1.340	May 30	4.88	1.020	June 14	2.36	1.325
	3.04	1.258	30	3.02	1.267		1.63	1.340		4.13	1.095		2.00	1.362
	2.50	1.341		2.51	1.351		1.54	1.365		3.00	1.212		1.93	1.375
	2.00	1.414		2.02	1.407		1.50	1.357		2.50	1.288	15	3.00	1.249
	1.50	1.500		1.80	1.450	15	2.98	1.210		2.00	1.366		2.50	1.319
17	3.02	1.357		1.50	1.501		2.50	1.288		1.50	1.450		2.20	1.372
	2.50	1.422	May 1	4.80	1.076		2.00	1.365	31	4.92	0.981		2.00	1.403
	2.01	1.479		4.03	1.146		1.80	1.401		4.26	1.046		1.80	1.445
	1.80	1.519		3.01	1.269		1.50	1.449		3.46	1.107	16	3.00	1.250
	1.50	1.566		2.50	1.329	16	1.59	1.396		2.98	1.195		2.49	1.298
18	3.00	1.317		2.01	1.405		1.54	1.424		2.50	1.262		2.20	1.334
	2.50	1.373		1.50	1.487		1.51	1.423		2.00	1.346		2.00	1.402
	2.01	1.443	2	3.00	1.215		1.48	1.449	June 1	3.00	1.192		1.85	1.430
	1.80	1.468		2.50	1.274		1.46	1.453		2.50	1.269	17	3.00	1.298
	1.50	1.528		2.00	1.359	17	3.00	1.231		2.21	1.317		2.50	1.371
19	1.35	1.538		1.82	1.389		2.50	1.298		2.00	1.343		2.35	1.400
	1.33	1.538		1.50	1.471		2.00	1.366		1.93	1.357		2.00	1.439
	1.30	1.551	3	3.00	1.216		1.80	1.399	2	3.00	1.209		1.93	1.440
	1.28	1.566		2.50	1.276		1.50	1.461		2.50	1.295	18	4.92	1.127
	1.26	1.561		2.00	1.359	18	1.74	1.397		2.37	1.315		4.27	1.189
20	2.99	1.329		1.80	1.398		1.69	1.416		2.09	1.360		3.65	1.242
	2.48	1.400		1.50	1.454		1.62	1.425		2.00	1.394		2.99	1.307
	2.00	1.470	4	4.84	1.113		1.58	1.434	3	2.04	1.300		2.50	1.368
	1.80	1.505		4.06	1.175		1.50	1.441		1.95	1.301		2.00	1.440
	1.50	1.545		3.00	1.285	20	2.99	1.216		1.86	1.343	19	3.01	1.309
21	3.00	1.338		2.49	1.381		2.50	1.288		1.80	1.341		2.50	1.369
	2.50	1.405		1.99	1.417		2.00	1.366		1.68	1.367		2.20	1.408
	2.01	1.481		1.51	1.481		1.92	1.370	6	3.00	1.112		2.00	1.442
	1.80	1.507	6	2.20	1.320		1.80	1.384		2.50	1.192		1.93	1.454
	1.50	1.558		2.00	1.365	21	2.35	1.298		2.00	1.292	20	4.89	1.095
22	2.95	1.297		1.81	1.387		2.14	1.329		1.92	1.297		4.25	1.136
	2.50	1.355		1.60	1.429		2.05	1.336		180	1.309		3.66	1.217
	2.01	1.438		1.50	1.450		1.91	1.363	8	3.01	1.171		3.00	1.273
	1.81	1.470	7	3.02	1.313		1.84	1.368		2.50	1.240		2.50	1.344
	1.50	1.512		2.51	1.362	22	4.89	0.997		2.35	1.279		1.98	1.413
23	3.02	1.288		2.21	1.409		4.11	1.067		2.08	1.312	21	2.20	1.348
	2.50	1.377		2.00	1.433		3.00	1.192		2.00	1.333		2.10	1.362
	2.00	1.443		1.81	1.458		2.49	1.258	9	2.30	1.246		2.00	1.363
	1.81	1.467	8	3.06	1.272		2.00	1.333		2.12	1.287		1.93	1.414
	1.45	1.535		2.60	1.336		1.51	1.419		2.04	1.271		1.80	1.430
25	3.00	1.214		2.29	1.374	23	2.99	1.189		1.91	1.325	22	3.00	1.225
	2.50	1.278		1.94	1.418		2.50	1.269		1.84	1.329		2.50	1.289
	2.01	1.347		1.78	1.436		2.00	1.343	10	3.00	1.190		2.20	1.337
	1.80	1.398	9	3.00	1.264		1.79	1.382		2.50	1.272		2.00	1.356
	1.50	1.441		2.59	1.305		1.50	1.413		2.00	1.369		1.93	1.387
26	3.02	1.347		2.29	1.348	24	1.82	1.367		1.93	1.383	26	3.01	1.099
	2.50	1.418		2.05	1.394		1.76	1.381		1.80	1.395		2.50	1.198
	2.00	1.472		1.87	1.416		1.64	1.412	11	3.00	1.246		2.20	1.248
	1.80	1.496	10	3.00	1.240		1.61	1.408		2.50	1.316		2.00	1.273
	1.50	1.533		2.50	1.300		1.58	1.412		2.00	1.388		1.80	1.305
27	3.01	1.313		2.00	1.342	27	3.02	1.146		1.93	1.400	27	3.00	1.223
	2.50	1.378		1.80	1.390		2.49	1.243		1.80	1.421		2.50	1.282
	2.35	1.402		1.50	1.449		2.00	1.316	12	2.97	1.241		2.20	1.324
	2.17	1.429	11	4.90	0.962		1.93	1.337		2.49	1.322		2.00	1.359
	2.00	1.461		4.09	1.034		1.50	1.409		2.00	1.398		1.80	1.388
28	2.00	1.454		3.00	1.168	28	3.00	1.146		1.93	1.395	28	3.00	1.187
	1.83	1.499		2.51	1.236		2.50	1.207		1.80	1.424		2.50	1.261
	1.76	1.500		2.00	1.327		1.99	1.292	13	4.88	1.062		2.20	1.315
	1.68	1.515		1.50	1.413		1.91	1.295		4.24	1.118		2.00	1.352
	1.62	1.513	12	3.00	1.137		1.50	1.390		3.62	1.173		1.80	1.388
29	4.88	1.086		2.49	1.220	29	2.29	1.274		3.00	1.262	29	3.00	1.158
	4.05	1.167		2.35	1.252		2.00	1.307		2.50	1.301		2.50	1.220
	3.05	1.280		2.16	1.273		1.93	1.319		2.00	1.383		2.20	1.269
	2.50	1.321		2.00	1.299		1.80	1.363	14	3.00	1.236		2.00	1.307
	2.00	1.420	13	1.75	1.311		1.50	1.422		2.50	1.298		1.93	1.317

Table 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1931—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*			**1931**—*Cont'd*		
June 30	3.00	1.160	July 14	1.44	1.413	Aug. 4	2.00	1.455	Aug. 17	1.99	1.368	Sept. 2	1.95	1.454
	2.51	1.269	15	2.99	1.303		1.91	1.474		1.79	1.396		1.76	1.488
	2.20	1.300		2.49	1.361	5	3.00	1.296		1.50	1.454	3	3.05	1.233
	2.00	1.336		2.19	1.400		2.50	1.358	18	2.99	1.218		2.49	1.321
	1.93	1.345		2.00	1.445		2.00	1.424		2.50	1.293		2.19	1.375
July 1	3.01	1.223		1.89	1.464		1.91	1.450		2.00	1.373		1.93	1.424
	2.50	1.293	16	1.68	1.492		1.80	1.463		1.79	1.410		1.75	1.454
	2.20	1.344		1.59	1.505	6	4.84	1.115		1.50	1.461	5	2.12	1.394
	2.00	1.372		1.53	1.521		4.18	1.181	19	3.01	1.121		1.84	1.433
	1.93	1.384		1.50	1.528		3.54	1.235		2.50	1.200		1.72	1.466
2	3.00	1.203		1.49	1.530		3.00	1.295		2.00	1.280		1.60	1.489
	2.50	1.278	17	1.56	1.511		2.50	1.349		1.80	1.318		1.50	1.507
	2.20	1.329		1.54	1.517		2.00	1.409		1.50	1.371	6	2.02	1.421
	2.00	1.347		1.52	1.522	7	4.84	1.089	20	3.00	1.026		1.83	1.449
	1.80	1.378		1.50	1.516		4.17	1.163		2.50	1.099		1.67	1.474
4	1.61	1.490		1.48	1.514		3.54	1.221		2.20	1.149		1.54	1.495
	1.56	1.497	22	2.99	1.298		3.00	1.282		2.00	1.193		1.40	1.518
	1.54	1.501		2.50	1.354		2.00	1.395		1.80	1.241	7	1.47	1.510
	1.52	1.504		2.20	1.400	8	3.02	1.233	21	2.99	1.114		1.39	1.530
5	3.00	1.274		2.00	1.424		2.50	1.297		2.49	1.182		1.33	1.540
	2.50	1.357		1.91	1.454		2.00	1.374		2.00	1.268		1.27	1.547
	2.20	1.391	23	3.02	1.249		1.80	1.414		1.80	1.317		1.23	1.559
	2.00	1.422		2.50	1.323		1.50	1.469		1.50	1.382	8	2.14	1.452
	1.94	1.450		2.20	1.356	9	3.00	1.261	22	3.00	1.083		1.91	1.489
6	3.00	1.252		2.00	1.388		2.49	1.325		2.50	1.176		1.73	1.525
	2.50	1.307		1.91	1.413		2.19	1.381		1.99	1.282		1.58	1.551
	2.20	1.352	24	4.86	1.084		1.99	1.395		1.80	1.336		1.47	1.568
	2.00	1.382		4.22	1.159		1.79	1.427		1.50	1.414	9	3.02	1.168
	1.94	1.397		3.59	1.220	10	3.00	1.283	23	3.40	1.258		2.54	1.225
7	2.99	1.225		2.99	1.265		2.50	1.348		1.69	1.488		2.20	1.297
	2.50	1.286		2.50	1.325		2.00	1.428		1.80	1.473		1.93	1.338
	2.20	1.335		2.00	1.403		1.79	1.461		1.88	1.474		1.70	1.401
	2.00	1.360	25	3.00	1.320		1.50	1.515	24	1.35	1.501	16	2.06	1.321
	1.94	1.377		2.50	1.382	11	3.01	1.232		1.33	1.502		1.75	1.379
8	4.88	1.037		2.19	1.433		2.50	1.300		1.30	1.507		1.59	1.411
	4.23	1.121		2.00	1.463		2.20	1.343		1.29	1.515		1.44	1.439
	3.61	1.176		1.92	1.482		1.99	1.380		1.28	1.502		1.37	1.451
	3.00	1.246	26	3.00	1.271		1.79	1.424	27	1.98	1.216	17	1.25	1.528
	2.50	1.316		2.50	1.340	12	1.77	1.380		1.78	1.254		1.21	1.523
	2.00	1.382		2.20	1.389		1.71	1.401		1.62	1.281		1.18	1.530
9	3.00	1.263		2.00	1.432		1.62	1.404		1.50	1.313		1.15	1.535
	1.59	1.489		1.92	1.448		1.58	1.427		1.41	1.384		1.13	1.539
	1.57	1.504	27	3.00	1.079		1.50	1.434	29	2.83	1.220	20	2.17	1.350
	1.54	1.460		2.50	1.150	13	1.75	1.370		2.40	1.298		1.92	1.379
	1.53	1.485		2.20	1.218		1.60	1.400		2.10	1.365		1.74	1.424
10	4.89	1.045		2.00	1.240		1.51	1.439		1.88	1.410		1.59	1.458
	4.25	1.103		1.92	1.271		1.44	1.461		1.54	1.462		1.48	1.486
	3.62	1.168	Aug. 1	3.00	1.208		1.39	1.474	30	1.35	1.519	21	2.48	1.308
	3.00	1.234		2.49	1.272	14	2.98	1.140		1.30	1.538		2.15	1.358
	2.50	1.295		2.19	1.313		2.50	1.204		1.25	1.552		1.91	1.406
	2.00	1.366		2.00	1.340		2.19	1.274		1.24	1.531		1.71	1.442
11	1.58	1.375		1.92	1.360		2.00	1.306		1.23	1.530		1.57	1.462
	1.54	1.372	2	3.00	1.266		1.79	1.350	31	2.91	1.260	26	2.38	1.223
	1.52	1.374		2.50	1.330	15	3.01	1.126		2.42	1.341		2.07	1.293
	1.51	1.394		2.20	1.373		2.50	1.191		2.12	1.399		1.84	1.349
	1.50	1.395		2.00	1.401		2.19	1.256		1.89	1.445		1.67	1.385
13	3.00	1.247		1.91	1.419		2.00	1.293		1.71	1.490		1.51	1.408
	2.50	1.302	3	3.00	1.292		1.79	1.328	Sept. 1	2.95	1.324	Oct. 1	1.90	1.482
	2.20	1.360		2.50	1.352	16	3.00	1.129		2.48	1.385		1.74	1.511
	2.00	1.395		2.20	1.397		2.49	1.212		2.20	1.422		1.57	1.539
	1.88	1.402		2.00	1.422		1.99	1.295		1.95	1.460		1.45	1.558
14	3.00	1.235		1.90	1.440		1.79	1.345		1.78	1.488		1.34	1.572
	2.49	1.310	4	3.00	1.310		1.50	1.402	2	3.07	1.293	2	2.53	1.376
	2.20	1.344		2.50	1.384	17	3.00	1.215		2.50	1.364		2.24	1.417
	1.99	1.379		2.20	1.409		2.50	1.279		2.19	1.411		1.92	1.466

TABLE 9.—*Pyrheliometer data, Mount Brukkaros, South-West Africa*—Continued

Date	Air mass	Pyrh.
1931—*Cont'd*		
Oct. 2	1.71	1.501
	1.54	1.527
3	2.45	1.375
	2.13	1.423
	1.85	1.465
	1.68	1.492
	1.54	1.508
4	2.50	1.431
	2.20	1.473
	2.00	1.511
	1.79	1.545
	1.50	1.572
6	2.44	1.461
	3.19	1.489
	2.00	1.508
	1.50	1.586
	1.40	1.618
7	2.25	1.335
	1.96	1.395
	1.75	1.428
	1.59	1.461
	1.45	1.483
8	2.49	1.372
	2.14	1.424
	1.88	1.471
	1.70	1.501
	1.55	1.540
9	2.50	1.431
	2.18	1.474
	1.90	1.515
	1.73	1.548
	1.55	1.573
Oct. 10	2.50	1.451
	2.17	1.485
	1.90	1.521
	1.71	1.543
	1.54	1.563
11	2.50	1.388
	2.14	1.454
	1.85	1.496
	1.67	1.526
	1.52	1.560
12	2.49	1.372
	2.14	1.427
	1.88	1.472
	1.69	1.493
	1.55	1.530
13	2.50	1.364
	2.15	1.414
	1.86	1.471
	1.70	1.472
	1.52	1.530
15	2.45	1.130
	2.11	1.200
	1.78	1.300
	1.65	1.324
	1.50	1.351
20	1.70	1.547
	1.57	1.574
	1.45	1.583
	1.38	1.606
	1.31	1.633
21	2.50	1.404
	2.20	1.452
Oct. 21	2.00	1.502
	1.70	1.552
	1.50	1.574
23	2.20	1.341
	1.99	1.388
	1.70	1.450
	1.50	1.475
	1.40	1.500
24	1.77	1.464
	1.60	1.494
	1.48	1.520
	1.38	1.543
	1.29	1.558
25	2.20	1.360
	1.99	1.425
	1.69	1.483
	1.60	1.488
	1.50	1.514
26	2.20	1.322
	1.99	1.356
	1.70	1.413
	1.60	1.434
	1.50	1.446
27	2.20	1.385
	1.99	1.435
	1.70	1.477
	1.60	1.507
	1.50	1.515
30	2.00	1.331
	1.70	1.406
	1.60	1.424
	1.50	1.442
Oct. 30	1.40	1.462
Nov. 4	2.19	1.417
	2.00	1.461
	1.70	1.509
	1.50	1.556
	1.40	1.576
5	2.20	1.439
	2.00	1.474
	1.70	1.525
	1.50	1.562
	1.40	1.572
6	2.20	1.391
	2.00	1.430
	1.70	1.483
	1.50	1.505
	1.40	1.527
8	2.00	1.363
	1.80	1.407
	1.50	1.465
	1.40	1.508
	1.34	1.515
9	2.00	1.394
	1.80	1.417
	1.60	1.456
	1.50	1.485
	1.40	1.497
10	2.00	1.369
	1.80	1.398
	1.60	1.438
	1.50	1.463
	1.41	1.498
Nov. 11	2.10	1.286
	1.96	1.322
	1.80	1.368
	1.60	1.388
	1.50	1.424
13	1.08	1.539
	1.06	1.565
16	2.00	1.395
	1.80	1.421
	1.60	1.451
	1.50	1.478
	1.40	1.486
17	2.00	1.362
	1.80	1.405
	1.60	1.423
	1.50	1.446
18	2.00	1.385
	1.80	1.421
	1.60	1.459
	1.50	1.461
	1.40	1.485
19	2.00	1.386
	1.80	1.422
	1.60	1.462
	1.50	1.481
	1.40	1.504
20	2.00	1.372
	1.80	1.415
	1.61	1.451
	1.50	1.479
	1.40	1.498

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*

Date	Air mass	Pyrh.
1920		
Oct. 4	1.55	1.473
	2.18	1.383
	2.86	1.297
	3.60	1.206
	4.31	1.129
5	1.42	1.494
	1.54	1.459
8	1.75	1.406
	1.32	1.484
9	1.48	1.470
	2.07	1.377
	2.69	1.281
	3.42	1.184
	4.30	1.095
10	1.46	1.567
	2.16	1.467
	2.96	1.359
	3.64	1.280
	4.66	1.182
11	1.42	1.547
12	3.17	1.306
13	1.80	1.445
	2.54	1.317
	2.90	1.274
	3.60	1.183
	4.54	1.110
14	4.62	1.138
1920—*Cont'd*		
Oct. 14	3.88	1.243
	3.10	1.333
	2.58	1.385
	2.12	1.440
	1.48	1.537
15	5.33	1.111
	4.53	1.183
	3.63	1.275
	2.80	1.369
	2.20	1.443
	1.55	1.537
16	5.18	1.076
	4.26	1.168
	3.50	1.243
	2.82	1.311
	2.21	1.404
	1.53	1.510
18	1.62	1.463
	2.08	1.359
21	2.92	1.307
22	1.52	1.516
	2.19	1.420
	2.70	1.342
	3.43	1.264
	3.93	1.223
	4.58	1.161
23	1.43	1.540
Oct. 24	1.57	1.470
	2.22	1.346
	2.85	1.235
25	4.96	1.104
	4.18	1.179
	3.48	1.251
	2.75	1.333
	2.20	1.410
	1.56	1.502
26	4.98	1.144
	4.26	1.216
	3.42	1.304
	2.76	1.373
	2.07	1.459
	1.53	1.536
Nov. 3	5.12	1.206
	4.33	1.280
	3.63	1.348
	2.77	1.431
	2.12	1.504
	1.63	1.563
5	1.66	1.497
8	5.22	1.185
	4.32	1.261
	3.64	1.320
	2.81	1.411
	2.13	1.495
Nov. 8	1.69	1.553
13	2.30	1.422
	2.62	1.363
14	2.20	1.454
	1.76	1.524
16	1.91	1.455
	2.98	1.305
	4.72	1.128
17	1.94	1.457
	1.69	1.492
18	5.11	1.127
	4.41	1.193
	3.72	1.270
	2.98	1.342
	2.25	1.433
19	5.20	1.119
	4.32	1.193
	3.65	1.267
	2.87	1.444
20	2.14	1.458
21	5.09	1.127
	4.34	1.193
	3.68	1.266
	2.81	1.363
Dec. 15	2.42	1.413
	2.29	1.438
17	2.25	1.411
Dec. 19	2.03	1.456
	1.93	1.467
21	2.40	1.320
	2.00	1.363
28	5.04	1.174
	4.11	1.238
	3.43	1.315
	2.91	1.374
	1.85	1.528
30	5.01	1.144
	3.98	1.239
	3.36	1.325
	2.74	1.388
	2.17	1.457
	1.84	1.493
1921		
Jan. 7	5.41	1.168
	4.40	1.256
	3.64	1.327
	2.89	1.428
	2.26	1.519
	1.82	1.580
8	5.53	1.197
	4.45	1.283
	3.61	1.361
	2.85	1.447
	2.25	1.513

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1921—*Cont'd*			**1921**—*Cont'd*			**1921**—*Cont'd*			**1921**—*Cont'd*			**1921**—*Cont'd*		
Jan. 8	1.82	1.583	Feb. 12	2.13	1.472	Mar. 1	1.33	1.549	Mar. 28	2.62	1.130	Apr. 20	2.77	1.199
10	4.45	1.267		1.82	1.532		2.18	1.423		3.32	1.004		2.27	1.280
	3.54	1.358	13	5.20	1.158	2	4.87	1.127		4.11	0.893	22	1.51	1.432
	2.87	1.426		4.24	1.239		4.03	1.197		4.95	0.805		1.19	1.487
	2.24	1.515		3.40	1.323		3.25	1.286	29	4.72	0.936	23	1.42	1.494
	1.82	1.544		2.77	1.395		2.65	1.364		3.86	1.041		1.28	1.521
12	5.33	1.060		2.15	1.475		2.10	1.432		3.18	1.133	24	1.24	1.544
	4.26	1.147		1.61	1.539		1.44	1.537		2.60	1.224		1.16	1.557
	3.44	1.251	14	1.46	1.504	3	1.98	1.413		2.04	1.340	25	2.07	1.298
	2.82	1.336	15	1.46	1.644	4	1.62	1.480		1.36	1.478		1.78	1.382
	2.19	1.444		1.82	1.575		1.42	1.510	31	4.96	0.746	26	1.28	1.428
	1.86	1.517		2.24	1.514	5	1.42	1.487		4.08	0.852		1.19	1.459
13	2.14	1.481		2.84	1.435		2.10	1.301		3.29	0.991	27	2.76	1.288
	1.77	1.542		3.55	1.368		2.60	1.210		2.69	1.101		2.46	1.324
	1.92	1.506		4.43	1.258		3.27	1.116		2.09	1.212	28	1.18	1.541
14	5.43	1.144	16	4.84	1.213		4.08	1.015		1.39	1.377		1.12	1.557
	4.37	1.239		3.89	1.314		4.88	0.929	Apr. 6	4.96	0.945	29	2.01	1.390
	3.44	1.328		3.14	1.393	6	1.85	1.352		4.07	1.049		1.80	1.417
	2.67	1.422		2.46	1.463	7	4.59	1.046		3.29	1.145	30	2.05	1.397
	2.21	1.484		2.02	1.537		3.81	1.126		2.72	1.218		1.80	1.441
	1.80	1.544		1.52	1.627		3.24	1.202		2.09	1.339	May 1	1.21	1.536
16	1.62	1.490	17	1.54	1.585		2.68	1.271		1.33	1.507	2	1.23	1.517
19	5.52	1.142		2.02	1.524		2.14	1.357	7	4.95	0.959		1.14	1.531
	4.27	1.257		2.40	1.460	8	1.48	1.453		4.06	1.073	3	1.35	1.507
	3.47	1.326		2.99	1.400		2.17	1.323		3.36	1.181		1.22	1.532
	2.78	1.410		3.83	1.315		2.77	1.225		2.63	1.292	8	1.10	1.502
	2.14	1.494		4.93	1.214		3.33	1.153		2.05	1.393	9	3.25	1.127
	1.78	1.551	18	5.16	1.166		4.19	1.061		1.39	1.515	10	1.34	1.456
20	5.02	1.218		4.08	1.262		5.02	0.972	8	1.26	1.466		1.19	1.480
	4.13	1.287		3.29	1.345	16	4.87	1.103	9	1.19	1.498	12	5.04	0.860
	3.48	1.354		2.63	1.429		4.03	1.176	10	4.80	0.932		4.06	0.967
	2.81	1.430		2.09	1.503		3.36	1.269		4.03	1.029		3.24	1.067
	2.72	1.377		1.56	1.585		2.72	1.338		3.37	1.111		1.36	1.403
21	2.23	1.467	19	1.52	1.535		2.07	1.453		2.76	1.203	13	4.95	0.932
25	1.67	1.568		2.15	1.416		1.44	1.537		2.04	1.340		4.26	1.003
31	2.30	1.465		2.70	1.328	17	4.93	1.002		1.42	1.481		3.60	1.084
	1.63	1.533		3.46	1.231		4.06	1.095	11	5.01	0.998		2.79	1.201
	2.12	1.431		4.18	1.146		3.34	1.184		4.10	1.094		1.97	1.323
	2.72	1.360		5.02	1.073		2.69	1.262		3.39	1.174	14	1.04	1.489
	3.34	1.290	20	1.60	1.556		2.05	1.374		2.75	1.247	15	5.00	0.849
Feb. 2	5.23	1.225		1.44	1.571		1.41	1.477		2.08	1.362		4.29	0.939
	4.15	1.311	22	1.41	1.618	19	1.45	1.469		1.34	1.508		3.61	1.010
	3.28	1.405		2.05	1.485		2.09	1.345	12	1.63	1.435		2.96	1.092
	2.18	1.535		2.64	1.410	22	1.32	1.500	13	1.28	1.435		2.48	1.153
	1.68	1.596		3.36	1.333		5.02	1.386	15	4.84	1.010		1.99	1.240
3	1.68	1.550		4.11	1.251	23	4.87	1.060		3.98	1.108	16	1.98	1.346
4	1.93	1.474		4.96	1.187		4.07	1.140		3.27	1.199		1.75	1.379
6	1.60	1.583	23	1.62	1.545		3.33	1.228		2.70	1.275	18	4.87	0.932
8	5.04	1.098		2.20	1.451		2.63	1.326		2.08	1.374		4.18	1.014
	4.09	1.204		2.69	1.381		2.04	1.437		1.43	1.491		3.54	1.090
	3.21	1.305		3.39	1.309		1.49	1.547	17	4.94	0.943		2.91	1.185
	2.52	1.398		4.02	1.235	24	4.51	1.030		4.11	1.052		2.46	1.237
	2.01	1.482		5.05	1.140		3.81	1.112		3.35	1.141		1.96	1.314
	1.63	1.555	24	1.40	1.561		1.94	1.386		2.75	1.220	19	4.96	1.053
9	1.66	1.552		2.15	1.448		1.38	1.499		2.15	1.313		4.26	1.130
11	5.07	1.126		2.63	1.377	25	1.98	1.386		1.44	1.463		3.60	1.189
	4.21	1.199		3.32	1.305	26	1.25	1.364	18	5.08	0.941		2.96	1.258
	3.32	1.292		4.14	1.225	27	1.37	1.440		4.12	1.048		2.47	1.321
	2.68	1.372		5.02	1.148		2.04	1.321		3.40	1.145		1.99	1.394
	2.15	1.450	25	5.00	1.101		2.73	1.204		2.74	1.235	22	1.49	1.407
	1.63	1.519		4.15	1.186		3.35	1.089		2.10	1.352	23	1.04	1.547
12	5.10	1.138		3.37	1.277		4.15	0.985		1.41	1.482	25	5.02	0.981
	4.20	1.211		2.67	1.355		5.05	0.894	20	5.00	0.903		4.25	1.074
	3.39	1.298		2.13	1.439	28	1.38	1.434		4.08	1.016		3.51	1.146
	2.76	1.372		1.55	1.526		2.09	1.229		3.37	1.110		2.71	1.249

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1921—*Cont'd*		
May 25	1.99	1.349
	1.30	1.486
26	2.76	1.200
27	1.98	1.338
	1.26	1.456
28	2.09	1.345
	1.23	1.481
29	1.46	1.440
	1.30	1.474
30	1.99	1.326
31	1.82	1.233
	1.67	1.286
June 4	1.98	1.267
5	5.00	0.864
	4.30	0.931
	3.63	1.005
	2.70	1.131
	2.00	1.250
	1.28	1.376
6	1.99	1.294
	1.40	1.395
7	5.03	0.911
	4.31	0.974
	3.51	1.061
	2.70	1.159
	1.99	1.285
	1.29	1.417
8	1.99	1.281
	1.29	1.402
9	1.68	1.347
	1.29	1.423
10	2.66	1.147
	1.98	1.259
11	1.23	1.408
	1.30	1.396
15	4.93	1.006
	4.26	1.067
	3.50	1.146
	2.68	1.244
	1.99	1.357
	1.29	1.501
16	1.99	1.389
	1.29	1.502
17	4.93	1.079
	4.26	1.149
	3.52	1.232
	2.70	1.313
	1.98	1.407
	1.29	1.515
18	2.72	1.280
	2.11	1.355
19	1.29	1.482
	1.25	1.497
20	1.02	1.510
21	4.89	0.994
	4.24	1.053
	3.47	1.138
	2.67	1.240
	1.99	1.338
	1.29	1.453
22	1.99	1.327
	1.30	1.440
23	1.99	1.296
	1.29	1.420
24	2.83	1.146
June 24	1.22	1.425
25	4.84	1.066
	4.24	1.123
	3.43	1.202
	2.67	1.284
	2.03	1.378
	1.28	1.511
26	1.92	1.401
	1.30	1.500
27	4.96	1.027
	4.29	1.085
	3.50	1.177
	2.70	1.262
	2.00	1.358
	1.30	1.466
28	2.72	1.298
	1.99	1.396
29	1.97	1.324
	1.30	1.432
30	1.97	1.267
	1.30	1.396
July 1	4.77	0.890
	4.19	1.049
	3.43	1.114
	2.70	1.200
	2.00	1.300
	1.29	1.411
2	1.92	1.240
	1.30	1.357
3	1.47	1.392
	1.26	1.428
4	1.59	1.341
	1.30	1.388
5	2.00	1.366
	1.30	1.494
6	2.00	1.363
	1.30	1.468
7	2.01	1.300
	1.24	1.421
8	1.56	1.319
	1.30	1.363
9	1.18	1.360
10	1.30	1.346
17	1.39	1.352
	1.25	1.375
18	1.47	1.337
	1.52	1.327
19	1.09	1.394
	1.11	1.401
20	1.05	1.411
	1.04	1.416
21	1.85	1.265
	1.71	1.304
22	1.03	1.435
23	1.27	1.354
	1.31	1.344
25	1.10	1.353
	1.09	1.361
26	1.19	1.376
	1.22	1.370
27	1.29	1.361
	1.25	1.378
Aug. 2	1.05	1.485
	1.08	1.479
7	1.77	1.312
Aug. 9	1.40	1.370
	1.23	1.407
10	1.59	1.355
	1.28	1.410
11	1.55	1.343
12	1.65	1.318
	1.41	1.373
14	2.00	1.302
	1.30	1.417
15	4.96	0.948
	4.25	1.014
	3.50	1.093
	2.72	1.187
	2.01	1.283
	1.38	1.397
16	1.30	1.484
	1.34	1.477
17	4.90	0.987
	4.21	1.055
	3.51	1.094
	2.70	1.176
	2.00	1.243
	1.30	1.395
23	1.31	1.412
24	1.18	1.470
	1.31	1.448
25	1.62	1.364
28	1.57	1.314
	1.47	1.328
30	3.95	1.016
	3.39	1.077
	2.71	1.165
	1.98	1.283
	1.30	1.401
31	4.92	0.958
	4.21	1.015
	3.46	1.094
	2.70	1.178
	1.99	1.290
	1.30	1.420
Sept. 1	4.93	0.995
	4.28	1.052
	3.51	1.133
	2.70	1.233
	1.98	1.349
	1.30	1.472
2	2.70	1.254
	2.51	1.291
3	4.88	1.047
	4.17	1.117
	3.43	1.200
	2.74	1.289
	2.01	1.396
	1.30	1.513
4	1.98	1.426
	1.34	1.519
5	4.96	1.040
	4.24	1.100
	3.51	1.181
	2.71	1.283
	2.00	1.383
	1.30	1.494
6	5.01	1.037
	4.27	1.098
	3.55	1.170
Sept. 6	2.70	1.275
	2.01	1.372
	1.30	1.495
7	4.93	1.065
	4.23	1.133
	3.51	1.215
	2.73	1.309
	1.99	1.407
	1.30	1.518
8	2.00	1.400
	1.30	1.515
9	2.00	1.458
	1.30	1.555
10	4.88	1.092
	4.18	1.148
	3.49	1.225
	2.72	1.317
	2.00	1.414
	1.31	1.529
11	2.40	1.307
	2.60	1.272
12	2.18	1.350
	2.04	1.378
13	2.00	1.436
	1.30	1.547
14	4.94	1.102
	4.23	1.156
	3.51	1.226
	2.69	1.323
	1.99	1.404
	1.30	1.504
15	1.45	1.501
	1.41	1.517
16	2.00	1.384
	1.90	1.402
17	4.93	1.108
	4.21	1.159
	3.50	1.232
	2.71	1.327
	2.00	1.422
	1.30	1.535
18	2.02	1.416
	1.31	1.520
19	4.92	1.038
	4.23	1.104
	3.51	1.175
	2.72	1.263
	2.00	1.375
	1.30	1.506
20	4.91	1.061
	4.21	1.138
	3.50	1.215
	2.72	1.306
	2.00	1.403
	1.30	1.502
21	2.00	1.425
	1.31	1.522
23	1.31	1.452
24	4.89	1.005
	4.20	1.070
	3.51	1.149
	2.69	1.247
	2.00	1.340
	1.30	1.469
25	2.01	1.375
Sept. 25	1.31	1.476
26	4.93	1.030
	4.15	1.103
	3.43	1.181
	2.70	1.269
	2.00	1.371
	1.31	1.485
27	4.84	1.047
	4.17	1.108
	3.48	1.173
	2.71	1.271
	2.00	1.367
	1.31	1.484
Oct. 3	4.87	1.027
	3.51	1.089
	2.66	1.162
	2.00	1.271
	1.31	1.474
4	4.87	1.050
	4.20	1.112
	3.51	1.181
	2.70	1.271
	2.00	1.368
	1.31	1.481
5	1.29	1.481
7	4.92	1.078
	4.23	1.140
	3.55	1.214
	2.72	1.318
	2.00	1.416
	1.32	1.528
8	2.00	1.367
	1.32	1.488
9	4.95	0.938
	4.26	1.019
	3.56	1.096
	2.70	1.219
	2.00	1.336
	1.33	1.442
10	4.96	1.092
	4.27	1.152
	3.56	1.222
	2.72	1.314
	2.00	1.423
	1.33	1.537
11	1.99	1.434
	1.33	1.530
12	2.41	1.363
	2.27	1.378
14	2.01	1.381
	1.36	1.498
15	4.93	1.047
	4.25	1.097
	3.58	1.166
	2.70	1.274
	2.00	1.375
	1.36	1.481
16	2.10	1.369
	2.01	1.392
17	1.38	1.533
18	1.99	1.441
	1.38	1.546
19	4.96	1.102
	4.28	1.162
	3.57	1.233

Table 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1921—*Cont'd*		
Oct. 19	2.70	1.333
	2.01	1.436
	1.39	1.543
20	1.98	1.438
21	4.95	1.012
	4.28	1.077
	3.56	1.155
	2.71	1.277
	2.00	1.388
	1.40	1.482
22	1.57	1.480
	1.53	1.490
25	1.85	1.447
	1.87	1.442
26	4.91	1.138
	4.26	1.198
	3.52	1.276
	2.69	1.374
	2.00	1.469
	1.45	1.557
27	4.94	1.126
	4.27	1.185
	3.57	1.264
	2.71	1.370
	2.00	1.467
	1.46	1.549
28	1.97	1.507
	1.83	1.517
29	4.96	1.173
	4.31	1.231
	3.57	1.304
	2.72	1.401
	2.00	1.497
	1.53	1.565
30	2.04	1.491
	1.96	1.507
Nov. 1	2.01	1.477
	1.75	1.501
2	4.94	1.165
	4.30	1.215
	3.52	1.295
	2.71	1.394
	2.00	1.487
	1.55	1.550
3	2.70	1.342
	2.00	1.446
4	1.81	1.515
	1.70	1.529
7	2.71	1.425
	2.00	1.513
8	1.99	1.511
	1.88	1.522
10	4.92	1.170
	4.34	1.225
	3.82	1.277
	3.26	1.333
	2.69	1.406
	2.01	1.503
11	2.69	1.434
13	2.64	1.436
	2.00	1.518
14	4.99	1.157
	4.40	1.212
	3.87	1.250
	3.27	1.318
	2.69	1.386
	2.02	1.473
15	5.01	1.102
	4.42	1.151
	3.88	1.204
	3.31	1.265
	2.72	1.338
	2.01	1.438
18	1.94	1.543
	1.83	1.560
19	2.03	1.486
	1.92	1.505
20	2.72	1.410
	2.01	1.518
21	4.90	1.218
	4.37	1.266
	3.54	1.335
	2.72	1.425
	2.01	1.535
22	2.71	1.441
	2.00	1.547
23	1.78	1.453
	1.74	1.463
25	1.82	1.477
	1.77	1.486
26	2.45	1.408
	2.27	1.439
27	2.71	1.401
	2.00	1.504
28	1.77	1.478
	1.80	1.473
Dec. 2	2.48	1.390
	1.91	1.483
3	2.34	1.398
	2.44	1.397
4	2.00	1.490
	1.95	1.500
7	4.85	1.168
	4.33	1.213
	3.78	1.279
	3.25	1.340
	2.70	1.407
	2.00	1.500
8	4.87	1.233
	4.36	1.265
	3.80	1.320
	3.27	1.380
	2.70	1.447
	2.01	1.535
9	4.91	1.272
	4.39	1.314
	3.83	1.367
	3.29	1.426
	2.69	1.494
	2.01	1.577
11	2.11	1.514
	2.17	1.512
12	2.59	1.427
	1.91	1.528
15	4.92	1.122
	4.40	1.170
	3.79	1.225
	3.25	1.280
	2.70	1.350
	2.00	1.447
Dec. 23	1.92	1.503
30	2.86	1.336
1922		
Jan. 4	2.23	1.470
	2.06	1.488
5	2.59	1.427
9	2.21	1.388
10	2.39	1.454
	2.30	1.466
13	4.89	1.232
	4.32	1.276
	3.83	1.320
	3.25	1.387
	2.70	1.456
	1.99	1.555
14	4.95	1.240
	4.39	1.284
	3.85	1.336
	3.18	1.401
	2.66	1.471
	1.99	1.559
15	4.92	1.188
	4.38	1.238
	3.83	1.293
	3.28	1.351
	2.71	1.420
	2.00	1.516
16	4.93	1.170
	4.39	1.215
	3.84	1.263
	3.25	1.330
	2.71	1.401
	2.00	1.507
17	1.73	1.526
18	1.80	1.525
	1.87	1.479
20	4.95	1.196
	4.39	1.236
	3.84	1.290
	3.24	1.359
	2.69	1.432
	2.00	1.535
21	4.93	1.221
	4.38	1.270
	3.82	1.327
	3.28	1.385
	2.71	1.453
	2.00	1.535
22	2.70	1.453
	2.00	1.556
24	2.70	1.413
	1.96	1.532
25	4.87	1.167
	4.28	1.229
	3.71	1.292
	3.25	1.345
	2.69	1.418
	2.00	1.515
26	4.93	1.131
	4.36	1.178
	3.79	1.240
	3.28	1.304
	2.70	1.381
	2.00	1.496
28	2.70	1.349
Jan. 28	2.00	1.460
Feb. 2	4.88	1.184
	4.33	1.237
	4.76	1.298
	3.24	1.351
	2.70	1.416
	2.00	1.529
3	4.87	1.236
	4.32	1.283
	3.76	1.335
	3.24	1.387
	2.61	1.470
	1.99	1.548
4	2.23	1.442
	2.00	1.474
6	4.90	1.193
	4.34	1.245
	3.77	1.304
	3.24	1.365
	2.70	1.429
	2.00	1.520
12	2.70	1.442
	2.00	1.539
13	4.84	1.214
	4.26	1.271
	3.68	1.331
	3.22	1.379
	2.70	1.434
	2.00	1.524
14	2.35	1.471
16	4.91	1.158
	4.31	1.197
	3.77	1.254
	3.24	1.332
	2.68	1.390
	1.99	1.490
17	2.25	1.447
	2.37	1.430
18	2.67	1.381
	2.00	1.460
19	1.41	1.586
20	2.15	1.420
	2.00	1.433
22	2.20	1.426
25	1.37	1.497
28	2.34	1.413
	2.21	1.433
Mar. 1	4.95	1.099
	4.31	1.156
	3.74	1.228
	3.23	1.283
	2.70	1.353
	1.96	1.466
2	4.88	1.170
	4.27	1.225
	3.71	1.283
	3.21	1.333
	2.65	1.406
	1.92	1.506
3	1.33	1.603
4	1.82	1.413
	1.75	1.434
5	1.73	1.401
	1.67	1.428
6	1.82	1.484
Mar. 6	1.75	1.512
10	4.85	1.075
	4.24	1.135
	3.67	1.211
	3.18	1.273
	2.68	1.332
	2.00	1.419
13	2.77	1.311
	2.00	1.458
14	1.26	1.534
	1.25	1.536
18	4.87	1.131
	4.25	1.197
	3.67	1.265
	3.17	1.324
	2.00	1.482
19	2.68	1.367
	2.00	1.463
23	1.46	1.441
	1.42	1.458
24	1.57	1.465
	1.63	1.441
26	2.01	1.372
	1.30	1.504
27	1.39	1.511
	1.30	1.524
29	1.32	1.487
	1.35	1.483
Apr. 1	1.42	1.495
	1.25	1.554
2	2.05	1.350
	1.21	1.536
3	4.80	1.047
	4.13	1.120
	3.37	1.197
	2.69	1.295
	2.00	1.389
	1.44	1.499
7	1.98	1.391
	1.29	1.529
8	4.56	1.012
	3.60	1.102
	2.73	1.212
	1.99	1.335
	1.30	1.474
10	1.36	1.553
	1.30	1.564
11	2.02	1.374
	1.31	1.503
12	2.70	1.155
	2.00	1.265
13	1.24	1.556
	1.15	1.574
14	2.00	1.417
	1.29	1.529
15	4.52	1.041
	3.59	1.137
	2.67	1.254
	2.00	1.363
	1.27	1.543
	1.22	1.557
16	1.35	1.539
	1.24	1.560
17	2.02	1.426
	1.30	1.541

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1922—*Cont'd*		
Apr. 19	1.31	1.553
	2.00	1.427
20	1.89	1.451
	1.63	1.494
22	2.74	1.242
	2.36	1.337
	2.59	1.289
23	1.14	1.557
	1.13	1.560
24	4.85	0.985
	4.14	1.070
	3.32	1.167
	2.70	1.259
	2.00	1.372
	1.29	1.498
26	2.01	1.254
	1.29	1.414
27	4.89	0.770
	4.19	0.839
	3.41	0.942
	2.72	1.042
	2.02	1.180
	1.29	1.378
28	1.49	1.417
	1.29	1.453
30	2.02	1.421
	1.09	1.572
May 1	2.00	1.413
	1.29	1.506
2	4.86	0.923
	4.18	0.999
	3.40	1.102
	2.72	1.184
	2.02	1.304
	1.29	1.438
3	2.00	1.298
	1.30	1.439
4	1.99	1.271
	1.29	1.425
5	4.86	0.913
	4.18	0.987
	3.41	1.092
	2.82	1.166
	1.38	1.445
7	2.01	1.366
	1.29	1.486
10	1.90	1.356
	2.61	1.254
11	4.71	0.978
	4.12	1.044
	3.37	1.136
	2.72	1.223
	2.03	1.331
	1.29	1.484
12	2.00	1.341
	1.29	1.507
13	2.00	1.394
	1.30	1.511
14	2.00	1.311
	1.29	1.459
15	1.06	1.494
	1.05	1.502
16	4.80	0.956
	4.13	1.022
	3.38	1.115
	2.67	1.219
1922—*Cont'd*		
May 16	2.00	1.327
	1.30	1.459
17	2.70	1.256
	2.00	1.355
18	2.70	1.245
	2.02	1.357
19	2.00	1.335
	1.29	1.454
20	2.72	1.270
	2.00	1.373
21	2.01	1.394
	1.29	1.495
22	4.94	1.040
	4.25	1.110
	3.42	1.193
	2.72	1.274
	2.01	1.379
	1.29	1.500
25	4.93	0.962
	4.23	1.058
	3.41	1.181
	2.70	1.255
	2.02	1.361
	1.29	1.498
26	2.01	1.366
	1.30	1.485
27	2.00	1.363
	1.30	1.495
28	2.01	1.338
	1.30	1.478
29	2.02	1.332
	1.30	1.461
30	1.21	1.477
	1.19	1.487
31	4.76	0.958
	4.11	1.026
	3.41	1.107
	2.69	1.201
	2.01	1.318
	1.30	1.442
June 1	2.01	1.366
	1.30	1.493
2	1.19	1.515
	1.21	1.504
3	4.85	1.080
	4.20	1.134
	3.40	1.219
	2.68	1.307
	2.01	1.401
	1.30	1.508
4	2.02	1.378
	1.30	1.490
5	2.00	1.384
	1.30	1.485
6	4.92	1.117
	4.25	1.176
	3.43	1.256
	2.67	1.332
	2.00	1.416
	1.30	1.512
7	2.01	1.395
	1.32	1.497
8	1.43	1.482
	1.39	1.498
9	1.60	1.461
	1.38	1.496
1922—*Cont'd*		
June 9	1.31	1.507
10	4.92	1.142
	4.24	1.208
	3.42	1.277
	2.70	1.357
	2.01	1.439
	1.30	1.537
11	2.00	1.404
	1.89	1.431
13	1.09	1.491
	1.08	1.495
14	2.71	1.253
	2.01	1.354
15	4.94	0.983
	4.25	1.050
	3.43	1.141
	2.71	1.228
	2.01	1.325
	1.30	1.448
16	2.00	1.356
	1.30	1.465
17	4.93	1.024
	4.24	1.077
	3.43	1.160
	2.69	1.249
	2.00	1.337
	1.30	1.466
18	2.01	1.314
	1.30	1.447
19	2.00	1.298
	1.29	1.432
20	1.93	1.263
	1.29	1.363
	1.25	1.369
21	1.38	1.283
	1.30	1.307
24	1.02	1.388
26	1.77	1.257
	1.69	1.281
	1.28	1.325
27	4.92	0.833
	4.24	0.899
	3.42	1.989
	2.67	1.087
	2.02	1.184
	1.37	1.312
28	4.87	0.824
	4.19	0.890
	3.39	0.980
	2.67	1.075
	2.00	1.181
	1.29	1.328
29	2.00	1.177
	1.30	1.326
30	2.00	1.238
	1.30	1.388
July 1	1.16	1.430
	1.13	1.438
2	1.06	1.370
	1.05	1.371
3	1.12	1.423
	1.53	1.331
4	1.51	1.274
	1.45	1.295
5	4.87	0.828
	4.19	0.890
1922—*Cont'd*		
July 5	3.40	1.001
	2.70	1.086
	2.01	1.190
	1.30	1.332
8	4.87	0.790
	4.19	0.862
	3.40	0.964
	2.58	1.093
	2.01	1.198
	1.29	1.346
9	2.01	1.181
	1.30	1.320
10	2.01	1.304
	1.29	1.432
11	1.26	1.428
	1.12	1.460
12	2.71	1.200
	2.00	1.295
13	2.68	1.217
	1.98	1.310
14	4.87	0.839
	4.19	0.914
	3.43	1.012
	2.68	1.113
	2.00	1.237
	1.30	1.385
15	1.84	1.230
	1.30	1.325
16	1.33	1.349
	1.30	1.357
17	1.43	1.338
	1.39	1.343
18	1.39	1.320
	1.32	1.336
20	1.14	1.378
21	2.01	1.250
	1.33	1.380
22	4.56	1.014
	3.90	1.082
	3.20	1.149
	2.69	1.197
	2.00	1.299
	1.30	1.407
23	1.04	1.474
24	1.06	1.453
	1.09	1.448
28	1.06	1.470
30	1.14	1.363
	1.18	1.346
Aug. 3	4.64	0.896
	4.01	0.960
	3.27	1.044
	2.68	1.120
	2.00	1.230
	1.28	1.385
4	1.99	1.286
	1.30	1.398
5	1.45	1.320
	1.29	1.359
11	1.48	1.165
	1.39	1.220
12	1.11	1.401
	1.48	1.344
14	1.59	1.366
	1.26	1.426
15	1.46	1.332
1922--*Cont'd*		
Aug. 15	1.11	1.386
16	1.17	1.350
21	2.22	1.243
	1.98	1.270
25	2.55	1.149
	2.01	1.250
	1.30	1.363
26	2.70	1.119
	1.82	1.277
27	2.66	1.087
	2.01	1.206
28	4.83	0.892
	4.13	0.962
	3.42	1.044
	2.68	1.138
	2.01	1.237
	1.30	1.372
29	2.70	1.172
	2.01	1.299
30	2.00	1.316
	1.30	1.453
31	1.27	1.363
	1.25	1.366
Sept. 1	2.00	1.279
	1.30	1.419
3	2.01	1.324
	1.30	1.439
5	1.16	1.497
	1.18	1.501
9	2.01	1.266
	1.30	1.394
10	4.86	0.950
	4.15	1.034
	3.43	1.116
	2.68	1.191
	2.01	1.287
	1.30	1.439
11	1.33	1.402
	1.30	1.402
12	2.67	1.170
	2.01	1.278
	1.16	1.458
	1.15	1.460
14	4.65	0.936
	4.07	0.996
	3.32	1.081
	2.70	1.162
	2.00	1.272
	1.31	1.408
15	2.00	1.277
	1.30	1.404
16	1.17	1.395
17	2.70	1.097
	2.01	1.218
18	1.39	1.334
	1.30	1.366
19	4.87	0.799
	4.17	0.881
	3.41	0.977
	2.71	1.077
	2.02	1.207
	1.30	1.378
20	2.02	1.253
	1.32	1.388
21	2.70	1.165
	2.48	1.200

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1922—*Cont'd*		
Sept. 23	2.01	1.256
	1.32	1.407
24	1.97	1.231
	1.31	1.355
25	4.75	0.869
	4.13	0.933
	3.35	1.029
	2.73	1.119
	2.00	1.243
26	2.01	1.260
	1.31	1.394
27	1.23	1.422
	1.24	1.441
28	1.91	1.378
	2.11	1.351
29	4.79	1.170
	4.18	1.225
	3.42	1.295
	2.70	1.373
	2.00	1.461
	1.32	1.563
30	2.01	1.386
	1.30	1.500
Oct. 1	1.77	1.398
	1.62	1.430
2	1.31	1.424
3	1.39	1.487
	1.44	1.481
4	2.01	1.344
	1.39	1.455
5	4.75	1.084
	4.16	1.149
	3.38	1.230
	2.71	1.304
	2.01	1.391
	1.30	1.535
6	2.00	1.457
	1.74	1.501
	1.35	1.557
7	2.01	1.441
	1.31	1.541
8	2.70	1.289
	1.99	1.384
9	1.88	1.364
	1.33	1.463
10	4.93	1.097
	4.23	1.156
	3.38	1.245
	2.68	1.330
	2.00	1.424
	1.35	1.525
11	2.01	1.470
	1.85	1.494
12	2.68	1.363
	1.97	1.463
13	2.73	1.331
	2.01	1.453
14	4.83	1.020
	4.18	1.089
	3.40	1.181
	2.70	1.284
	2.01	1.387
	1.36	1.478
Oct. 15	2.69	1.295
	2.00	1.405
16	2.69	1.310
	2.00	1.413
17	2.68	1.271
	2.25	1.336
18	2.01	1.350
	1.39	1.485
19	1.84	1.379
	1.42	1.466
20	1.70	1.327
	1.61	1.345
21	2.30	1.228
	2.43	1.203
22	4.84	1.092
	4.19	1.172
	3.40	1.242
	2.70	1.317
	2.00	1.402
	1.47	1.474
23	2.69	1.320
	2.39	1.363
24	2.69	1.380
	2.01	1.477
25	2.44	1.450
	2.01	1.515
27	2.00	1.404
	1.45	1.487
29	4.86	1.071
	4.21	1.149
	3.43	1.230
	2.93	1.295
	1.48	1.545
	1.47	1.549
30	2.44	1.326
	2.31	1.348
31	1.98	1.413
	1.68	1.441
Nov. 2	4.95	1.172
	4.36	1.227
	3.85	1.269
	3.22	1.338
	2.70	1.397
3	1.82	1.488
	1.77	1.507
4	4.95	1.100
	4.36	1.159
	3.81	1.216
	3.24	1.282
	2.70	1.351
	2.00	1.453
5	2.72	1.380
	2.00	1.470
6	2.71	1.370
	2.00	1.474
7	2.91	1.374
	2.57	1.415
9	2.71	1.375
	2.00	1.466
10	2.70	1.401
	1.98	1.488
11	2.70	1.371
	2.00	1.467
12	4.90	1.146
	4.35	1.187
Nov. 12	3.26	1.319
	2.70	1.383
	2.00	1.488
13	1.65	1.463
14	2.35	1.369
	2.18	1.396
15	1.74	1.497
	1.69	1.507
16	2.70	1.285
	2.00	1.290
17	2.70	1.366
	1.98	1.446
18	2.71	1.368
	2.00	1.460
19	4.96	1.195
	4.39	1.240
	3.86	1.295
	3.25	1.362
	2.68	1.421
	2.00	1.497
20	2.69	1.369
	2.00	1.479
21	2.71	1.261
	2.00	1.382
22	2.19	1.292
	2.02	1.315
23	4.97	1.017
	4.42	1.078
	3.90	1.128
	3.27	1.211
	2.70	1.308
	2.02	1.421
24	2.70	1.331
	2.00	1.433
25	2.70	1.383
	2.00	1.488
26	2.70	1.447
	2.00	1.531
28	2.71	1.353
	1.91	1.467
Dec. 2	4.95	1.118
	4.40	1.165
	3.90	1.218
	3.25	1.287
	2.70	1.344
	2.00	1.441
5	2.70	1.456
	2.00	1.542
6	2.69	1.407
	2.54	1.411
8	2.27	1.468
	2.19	1.484
11	1.96	1.453
	2.00	1.447
16	4.96	1.121
	4.44	1.165
	3.93	1.219
	3.26	1.294
	2.70	1.346
	2.00	1.473
18	4.96	1.192
	4.42	1.240
	3.92	1.286
	3.27	1.347
	2.70	1.420
Dec. 18	2.01	1.511
20	1.86	1.539
	1.88	1.531
21	2.69	1.435
	2.00	1.528
22	2.69	1.433
	2.22	1.490
23	4.50	1.231
	3.75	1.308
	3.24	1.369
	2.68	1.429
	1.99	1.523
24	2.68	1.468
	2.00	1.557
25	2.00	1.502
	1.93	1.516
27	1.87	1.515
	2.00	1.491
29	2.16	1.487
	2.00	1.518
30	1.85	1.520
	1.84	1.522
1923		
Jan. 1	4.64	1.181
	3.28	1.319
	2.68	1.395
	1.99	1.523
3	2.68	1.467
	1.99	1.559
4	2.66	1.439
	2.45	1.477
7	1.80	1.545
8	1.80	1.539
	1.81	1.551
9	4.95	1.182
	4.41	1.240
	3.91	1.289
	3.18	1.366
	2.71	1.420
	2.00	1.527
10	2.70	1.447
	2.57	1.480
11	2.70	1.459
	2.00	1.542
12	4.89	1.227
	4.37	1.278
	3.86	1.331
	3.25	1.385
	2.70	1.453
	2.00	1.544
13	2.27	1.438
	1.89	1.515
	2.00	1.501
14	2.16	1.450
	2.00	1.473
16	4.89	1.114
	4.37	1.168
	3.86	1.234
	3.25	1.301
	2.70	1.365
	2.00	1.460
18	1.94	1.439
	1.75	1.456
20	4.89	1.088
	4.36	1.143
Jan. 20	3.81	1.202
	3.25	1.265
	2.69	1.339
	2.00	1.440
21	2.71	1.314
	2.00	1.439
27	4.90	1.075
	4.34	1.141
	3.78	1.212
	3.21	1.290
	2.70	1.369
	2.00	1.469
28	1.96	1.489
	1.90	1.501
Feb. 2	2.69	1.354
	2.09	1.436
3	1.98	1.456
	1.91	1.473
	1.63	1.531
4	1.60	1.586
	1.58	1.582
5	4.85	1.192
	4.30	1.232
	3.73	1.289
	3.22	1.345
	2.70	1.410
	2.00	1.505
6	2.70	1.400
	2.51	1.426
7	2.71	1.408
	2.00	1.507
8	2.70	1.402
	2.00	1.504
	1.56	1.568
10	1.68	1.590
	1.64	1.602
12	1.63	1.540
	1.67	1.535
	2.23	1.457
15	2.36	1.353
	2.23	1.372
	1.71	1.463
16	4.90	0.997
	4.32	1.060
	3.71	1.134
	3.22	1.200
	2.69	1.278
	2.00	1.390
	1.50	1.487
17	1.46	1.494
	1.44	1.496
	1.62	1.459
18	2.71	1.327
	2.17	1.329
	2.00	1.433
	1.87	1.457
22	2.17	1.224
	2.00	1.260
	1.87	1.282
	1.61	1.336
	1.55	1.351
23	4.64	0.988
	4.10	1.053
	3.37	1.145

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1923—*Cont'd*		
Feb. 23	2.71	1.231
	1.99	1.356
	1.50	1.466
25	2.70	1.322
	2.41	1.360
	2.19	1.389
	1.55	1.487
	1.49	1.500
26	2.70	1.370
	2.41	1.413
	2.19	1.437
	2.00	1.457
	1.86	1.473
27	1.72	1.416
	1.63	1.440
	1.56	1.460
	1.50	1.473
Mar. 5	1.96	1.501
	1.87	1.519
	1.80	1.532
	1.72	1.548
	1.66	1.560
6	1.36	1.548
	1.34	1.552
	1.31	1.560
9	1.37	1.564
	1.33	1.572
12	1.98	1.464
	1.53	1.546
	1.29	1.582
13	1.79	1.501
14	1.90	1.336
15	4.84	1.154
	4.14	1.220
	3.39	1.307
	2.68	1.401
	2.00	1.508
	1.30	1.611
16	2.64	1.331
	2.01	1.425
	1.50	1.522
	1.30	1.560
17	2.70	1.237
	2.00	1.352
	1.80	1.390
	1.61	1.426
18	2.11	1.466
	2.00	1.481
	1.45	1.571
	1.35	1.582
	1.29	1.588
19	1.64	1.500
	1.59	1.510
	1.46	1.529
	1.35	1.546
	1.30	1.564
21	1.49	1.547
	1.45	1.561
	1.35	1.566
	1.30	1.559
	1.28	1.567
22	4.85	1.087
	4.15	1.162
	3.35	1.248
	2.71	1.313
Mar. 22	2.00	1.420
	1.29	1.546
23	2.70	1.261
	1.99	1.394
	1.61	1.473
	1.40	1.526
	1.30	1.560
24	2.69	1.340
	2.01	1.432
	1.86	1.453
	1.50	1.513
	1.30	1.553
25	2.70	1.351
	2.00	1.459
	1.85	1.483
	1.30	1.572
26	4.86	1.217
	4.14	1.295
	3.38	1.358
	2.70	1.416
	2.00	1.429
	1.30	1.579
27	2.70	1.283
	2.30	1.344
	2.00	1.404
	1.78	1.448
28	2.70	1.043
	2.00	1.198
	1.85	1.237
	1.50	1.336
	1.29	1.400
29	2.70	1.092
	2.30	1.160
	2.00	1.228
	1.85	1.257
30	4.94	0.832
	4.21	0.905
	3.39	1.001
	2.71	1.111
	2.00	1.242
31	1.60	1.407
	1.50	1.126
	1.38	1.447
	1.30	1.460
Apr. 3	2.30	1.358
	1.99	1.414
	1.83	1.447
5	2.30	1.249
	2.00	1.295
	1.83	1.321
	1.50	1.385
	1.30	1.427
8	4.63	1.107
	4.02	1.168
	3.30	1.243
	2.71	1.316
	2.01	1.413
	1.30	1.543
9	2.70	1.296
	2.30	1.356
	2.00	1.403
	1.50	1.475
	1.30	1.510
12	4.70	1.053
	4.09	1.110
Apr. 12	3.34	1.184
	2.69	1.265
	2.00	1.356
	1.30	1.493
14	1.14	1.512
	1.12	1.526
	1.29	1.480
	1.35	1.460
15	2.69	1.232
	2.30	1.281
	2.00	1.333
	1.50	1.416
	1.30	1.462
16	1.99	1.254
	1.81	1.283
	1.67	1.308
	1.50	1.333
	1.30	1.392
20	2.30	1.243
	2.00	1.280
	1.19	1.475
	1.30	1.441
22	2.00	1.385
	1.50	1.442
	1.32	1.532
	1.29	1.541
	1.18	1.560
23	4.91	1.101
	4.20	1.165
	3.42	1.268
	2.70	1.311
	2.00	1.413
	1.30	1.525
24	1.19	1.413
	1.82	1.444
	1.50	1.486
	1.30	1.511
	1.17	1.534
25	2.70	1.274
	2.01	1.386
	1.85	1.426
	1.50	1.491
	1.30	1.517
26	1.19	1.469
	1.16	1.468
28	4.86	0.973
	4.16	1.046
	3.39	1.141
	2.71	1.215
	2.00	1.369
	1.30	1.522
29	2.00	1.393
	1.85	1.433
	1.50	1.475
	1.42	1.500
	1.30	1.522
May 1	2.00	1.404
	1.85	1.419
	1.50	1.484
	1.30	1.518
	1.26	1.524
2.	1.37	1.497
	1.56	1.456
	1.68	1.432
3	4.84	1.073
May 3	3.39	1.217
	2.69	1.310
	2.00	1.405
4	1.79	1.374
	2.00	1.348
	2.14	1.324
	2.70	1.251
5	2.50	1.355
	2.32	1.366
	1.06	1.531
	1.05	1.547
6	2.45	1.264
	2.00	1.332
	1.86	1.355
	1.50	1.420
	1.30	1.462
7	4.90	0.979
	4.18	1.055
	3.37	1.150
	2.70	1.243
	2.00	1.349
	1.30	1.466
8	2.70	1.249
	2.00	1.352
	1.85	1.391
	1.50	1.455
	1.30	1.493
10	4.89	0.906
	4.19	0.982
	3.38	1.067
	2.71	1.166
	2.00	1.287
	1.30	1.423
11	2.70	1.275
	2.01	1.372
	1.86	1.398
	1.50	1.467
	1.30	1.490
13	2.46	1.234
	2.01	1.304
	1.83	1.331
	1.30	1.416
	1.24	1.425
14	2.45	1.320
	2.00	1.392
	1.83	1.416
	1.50	1.464
	1.29	1.507
15	4.83	1.057
	4.22	1.109
	3.43	1.180
	2.70	1.267
	2.00	1.365
	1.30	1.475
16	2.70	1.216
	2.00	1.314
	1.50	1.396
	1.30	1.435
	1.24	1.453
17	2.70	1.270
	2.00	1.392
	1.50	1.468
	1.30	1.504
	1.24	1.517
18	2.70	1.165
May 18	1.49	1.347
	1.30	1.425
	1.24	1.432
	1.19	1.436
19	4.85	0.950
	4.24	1.008
	3.46	1.114
	2.70	1.185
	2.00	1.302
	1.30	1.444
20	2.70	1.224
	2.00	1.302
	1.50	1.394
	1.30	1.433
	1.24	1.434
21	2.69	1.233
	2.36	1.281
	2.01	1.338
	1.83	1.372
	1.50	1.423
22	2.70	1.169
	2.00	1.273
	1.50	1.395
	1.30	1.423
	1.24	1.427
23	2.70	1.196
	2.00	1.314
	1.50	1.393
	1.30	1.435
	1.24	1.440
24	4.87	0.889
	4.24	0.960
	3.46	1.042
	2.70	1.148
	1.99	1.271
	1.30	1.421
25	2.70	1.247
	2.00	1.355
	1.50	1.440
	1.30	1.471
	1.24	1.478
26	2.70	1.294
	2.00	1.404
	1.50	1.468
	1.30	1.494
	1.24	1.506
27	2.71	1.300
	1.99	1.408
	1.50	1.478
	1.30	1.527
	1.24	1.535
28	2.70	1.262
	2.01	1.353
	1.50	1.447
	1.30	1.493
	1.21	1.507
29	1.05	1.457
	1.06	1.453
	1.16	1.412
	1.21	1.404
	1.27	1.401
30	2.70	1.274
	2.00	1.372
	1.50	1.456
	1.30	1.485

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1923—*Cont'd*			**1923**—*Cont'd*			**1923**—*Cont'd*			**1923**—*Cont'd*			**1923**—*Cont'd*		
May 30	1.24	1.491	June 14	1.32	1.481	June 28	3.59	1.215	July 26	1.30	1.373	Aug. 21	2.72	1.193
31	4.87	1.115		1.47	1.446		2.71	1.302	27	1.52	1.295		2.01	1.312
	4.25	1.174		1.66	1.410		2.01	1.399		1.70	1.251		1.30	1.431
	3.47	1.242	16	2.32	1.270		1.30	1.505		1.85	1.225	22	2.30	1.274
	2.71	1.329		2.00	1.335	29	1.21	1.495		2.01	1.199		2.01	1.283
	2.00	1.417		1.73	1.428		1.16	1.509	Aug. 2	2.72	1.092		1.70	1.340
	1.30	1.532		1.49	1.463		1.08	1.536		2.01	1.211		1.51	1.373
June 1	2.70	1.278		1.30	1.518	30	2.31	1.327		1.71	1.270		1.31	1.423
	2.00	1.383	17	1.86	1.393		1.99	1.366		1.50	1.309	28	1.50	1.347
	1.50	1.479		1.70	1.413		1.71	1.399		1.30	1.344		1.30	1.382
	1.30	1.497		1.50	1.447		1.50	1.441	3	2.33	1.234		1.22	1.394
	1.24	1.512		1.40	1.466		1.30	1.471		2.00	1.289	Sept. 2	2.15	1.222
2	2.00	1.298		1.30	1.487	July 1	2.01	1.306		1.71	1.345		2.00	1.263
	1.70	1.343	18	2.01	1.274		1.86	1.329		1.50	1.380		1.71	1.325
	1.50	1.391		1.85	1.308		1.70	1.369		1.30	1.405		1.50	1.363
	1.30	1.428		1.71	1.342		1.50	1.390	4	5.04	0.898		1.30	1.403
	1.24	1.438		1.50	1.392		1.30	1.419		4.31	0.972	4	1.28	1.407
3	2.70	1.261		1.30	1.453	2	2.32	1.236		2.68	1.175		1.22	1.424
	2.00	1.345	19	2.81	1.203		2.00	1.296		2.00	1.275		1.19	1.421
	1.50	1.436		2.00	1.312		1.70	1.345		1.30	1.416		1.16	1.434
	1.30	1.466		1.71	1.363		1.50	1.402	5	1.30	1.479	5	2.68	1.200
	1.24	1.470		1.50	1.411		1.30	1.431		1.23	1.503		2.00	1.296
4	2.00	1.289		1.31	1.442	3	2.30	1.270		1.20	1.506		1.70	1.342
	1.70	1.351	20	1.05	1.443		2.01	1.304		1.15	1.510		1.50	1.383
	1.50	1.388		1.04	1.453		1.70	1.359	6	1.24	1.437		1.30	1.424
	1.30	1.432		1.03	1.478		1.50	1.392		1.38	1.430	6	1.39	1.358
	1.24	1.442		1.02	1.488		1.30	1.432		1.70	1.363		1.30	1.374
5	2.70	1.219	21	4.98	0.911	4	2.30	1.184		2.00	1.301		1.22	1.399
	2.30	1.273		4.29	0.969		2.00	1.253	7	2.00	1.328		1.16	1.393
	2.00	1.319		3.24	1.119		1.70	1.312		1.85	1.348	7	2.01	1.284
	1.82	1.374		2.71	1.177		1.50	1.352		1.70	1.363		1.70	1.330
6	4.88	1.038		2.05	1.287		1.30	1.390		1.50	1.388		1.50	1.352
	4.26	1.091		1.30	1.464	5	2.00	1.236		1.30	1.415		1.40	1.379
	3.49	1.166	22	2.71	1.231		1.85	1.262	8	1.18	1.455		1.30	1.384
	2.70	1.265		2.00	1.347		1.71	1.295		1.30	1.433	8	2.28	1.186
	2.00	1.355		1.70	1.378		1.50	1.325		1.70	1.361		1.95	1.244
	1.30	1.473		1.50	1.408		1.30	1.367		2.00	1.330		1.70	1.285
7	2.00	1.332		1.30	1.455	7	2.01	1.285	10	1.44	1.339	9	2.01	1.238
	1.70	1.349	23	2.30	1.314		1.85	1.309	13	1.50	1.337		1.71	1.286
	1.50	1.426		1.99	1.354		1.70	1.330		1.39	1.369		1.54	1.328
	1.30	1.445		1.70	1.408		1.50	1.366		1.30	1.387		1.33	1.372
	1.24	1.453		1.50	1.444		1.31	1.401		1.23	1.392		1.18	1.424
8	2.00	1.304		1.30	1.472	8	1.85	1.260		1.15	1.425	13	2.34	1.244
	1.70	1.351	24	2.00	1.340		1.71	1.280	14	4.94	0.929		1.95	1.311
	1.50	1.379		1.85	1.367		1.50	1.318		4.22	0.986		1.70	1.352
	1.30	1.419		1.70	1.394		1.39	1.338		3.47	1.045		1.51	1.382
	1.24	1.423		1.50	1.423		1.31	1.364		2.69	1.166		1.32	1.427
9	1.90	1.338		1.31	1.456	9	1.06	1.468		2.01	1.279	15	2.41	1.181
	1.67	1.375	25	2.32	1.281		1.04	1.462		1.30	1.408		2.03	1.255
	1.51	1.418		1.85	1.336		1.03	1.470	15	2.00	1.220		1.71	1.304
	1.30	1.454		1.70	1.361	10	4.96	0.917		1.70	1.282		1.52	1.341
10	2.70	1.234		1.50	1.394		4.27	0.981		1.50	1.304	16	2.37	1.171
	2.30	1.289		1.30	1.431		3.53	1.059		1.30	1.342		2.00	1.231
	2.00	1.332	26	2.60	1.236		2.71	1.138	19	2.33	1.122		1.71	1.289
	1.85	1.354		2.00	1.314		2.01	1.226		1.70	1.213		1.51	1.329
	1.56	1.399		1.70	1.355		1.30	1.296		1.50	1.300		1.30	1.377
11	1.18	1.471		1.50	1.415	19	2.62	1.097		1.30	1.331	18	1.70	1.339
	1.31	1.445		1.30	1.459		2.00	1.202	20	2.33	1.253		1.57	1.387
	1.54	1.399	27	2.30	1.357		1.70	1.254		2.02	1.301		1.37	1.423
12	1.31	1.477		2.00	1.399		1.50	1.291		1.71	1.346		1.28	1.442
	1.20	1.507		1.70	1.426		1.30	1.326		1.50	1.379	19	1.96	1.409
13	1.22	1.477		1.50	1.447	26	2.68	1.118		1.30	1.414		1.70	1.447
	1.40	1.430		1.31	1.482		2.00	1.220	21	5.02	0.940		1.52	1.466
	1.58	1.386	28	4.98	1.072		1.70	1.265		4.29	1.007		1.39	1.485
14	1.21	1.501		4.31	1.147		1.47	1.325		3.51	1.096		1.30	1.501

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1923—*Cont'd*			**1923**—*Cont'd*			**1923**—*Cont'd*			**1923**—*Cont'd*			**1924**—*Cont'd*		
Sept. 20	4.64	1.118	Oct. 8	1.91	1.445	Oct. 25	1.75	1.500	Dec. 6	3.22	1.374	Jan. 4	3.93	1.380
	3.99	1.180		2.04	1.427		1.62	1.512		2.70	1.436		3.23	1.443
	3.25	1.264		2.20	1.403		1.48	1.539		1.81	1.550		2.70	1.510
	2.72	1.328	9	2.35	1.373	26	1.46	1.532	7	2.70	1.391		2.18	1.567
	2.01	1.424		1.98	1.420		1.51	1.520		2.46	1.420		1.99	1.593
	1.31	1.543		1.70	1.465	29	1.52	1.556		2.15	1.454	5	2.70	1.513
21	2.41	1.321		1.51	1.506		1.49	1.566		2.00	1.485		2.32	1.549
	1.99	1.372		1.31	1.541	Nov. 2	2.34	1.413		1.93	1.491		2.10	1.572
	1.71	1.414	10	1.76	1.186		2.73	1.373	8	2.71	1.347		1.91	1.597
22	1.52	1.485		1.66	1.504	3	2.13	1.458		2.30	1.404		1.84	1.606
	1.41	1.505		1.51	1.529		1.90	1.490		2.00	1.435	6	2.71	1.475
	1.32	1.518	11	2.42	1.408		1.72	1.522		1.91	1.473		2.31	1.526
	1.20	1.525		1.98	1.466		1.66	1.535	12	2.68	1.418		2.09	1.545
24	1.98	1.416		1.69	1.503	5	1.80	1.484		2.44	1.452	7	2.87	1.444
	1.84	1.448		1.50	1.521		1.67	1.489		2.16	1.480		2.00	1.571
	1.69	1.470		1.38	1.536		1.61	1.491		2.00	1.499		1.90	1.577
	1.49	1.488	12	4.28	1.172		1.56	1.512		1.96	1.510	8	1.85	1.543
	1.30	1.520		3.55	1.238		1.55	1.516	15	2.70	1.351		1.87	1.544
25	2.45	1.353		2.69	1.337	6	1.59	1.499		2.45	1.386		1.88	1.560
	2.00	1.414		2.00	1.434		1.63	1.491		2.16	1.429	9	2.68	1.440
	1.70	1.453		1.34	1.532		1.70	1.497		2.00	1.447		2.44	1.467
	1.50	1.499	13	2.45	1.475		1.85	1.474		1.93	1.462		2.27	1.494
	1.30	1.534		2.01	1.518	8	2.59	1.330	16	4.95	1.128		2.15	1.511
26	2.30	1.371		1.87	1.524		2.08	1.398		4.37	1.184		2.00	1.536
	2.00	1.416		1.70	1.555	12	3.95	1.476		3.57	1.274	10	2.71	1.426
	1.70	1.467		1.50	1.599		1.99	1.485		2.40	1.377		2.46	1.462
	1.50	1.490	15	2.37	1.367		1.81	1.532		2.15	1.450		2.30	1.484
	1.30	1.523		1.71	1.483		1.70	1.550		2.00	1.480		2.16	1.503
27	2.35	1.419		1.53	1.511		1.64	1.557	17	2.70	1.414		2.00	1.527
	1.98	1.460		1.43	1.521	13	4.81	1.209		2.58	1.429	**11**	4.95	1.216
	1.71	1.495		1.38	1.522		4.29	1.260		2.43	1.447		4.42	1.256
	1.50	1.529	16	2.53	1.356		3.55	1.333		2.00	1.512		3.91	1.295
	1.31	1.565		1.91	1.431		2.70	1.416		1.96	1.518		3.25	1.360
28	5.00	1.088		1.68	1.460		2.03	1.513	21	2.78	1.344		2.70	1.426
	4.28	1.157	17	2.61	1.380	14	1.65	1.531		2.44	1.392		2.30	1.478
	3.51	1.228		2.08	1.447		1.70	1.564		2.44	1.392		2.00	1.521
	2.69	1.331		1.92	1.465	19	1.71	1.517		2.23	1.407	12	2.70	1.475
	1.99	1.419		1.62	1.514		1.75	1.501		2.17	1.420		2.46	1.503
	1.30	1.524		1.50	1.534	22	2.25	1.460		2.05	1.430		2.29	1.522
29	2.45	1.376	18	2.26	1.446		2.03	1.481	22	2.74	1.349		2.15	1.549
	1.98	1.440		1.94	1.491		1.90	1.499		2.51	1.390		2.00	1.568
	1.69	1.482		1.73	1.515		1.80	1.515	23	2.69	1.450	13	1.93	1.551
	1.50	1.506		1.57	1.544		1.72	1.516		2.45	1.485		1.88	1.563
	1.30	1.535	20	2.15	1.481	23	2.48	1.429		2.15	1.537		1.82	1.571
Oct. 2	2.46	1.394	21	1.82	1.494		2.14	1.473		2.00	1.560	14	2.15	1.462
	1.59	1.520		1.61	1.529		2.00	1.493		1.96	1.566	15	2.69	1.440
	1.48	1.534		1.51	1.539		1.82	1.529	30	2.48	1.391		2.45	1.466
	1.39	1.545		1.44	1.537		1.75	1.543	31	1.86	1.507		2.28	1.481
	1.30	1.569	22	4.83	1.122	26	2.19	1.494		1.85	1.513		2.13	1.499
4	1.85	1.433		4.24	1.183		2.00	1.516		1.84	1.516		2.00	1.518
	1.70	1.458		3.47	1.259		1.90	1.523	**1924**			16	2.55	1.426
	1.50	1.494		2.95	1.317	Dec. 3	2.73	1.348	Jan. 1	1.90	1.571		2.35	1.455
	1.34	1.513		2.03	1.454		2.35	1.394		1.91	1.562		2.20	1.475
	1.30	1.529		1.45	1.572	4	2.66	1.445		1.94	1.563	17	2.70	1.419
5	4.96	1.097	23	1.96	1.485		2.28	1.488	2	2.70	1.473		2.45	1.443
	4.26	1.149		1.75	1.503		2.02	1.518		2.46	1.503		2.27	1.463
	3.53	1.238		1.60	1.525		1.88	1.543		2.17	1.555		2.14	1.487
	2.70	1.321		1.50	1.553	5	2.69	1.422		2.00	1.567		2.00	1.515
	2.00	1.411	24	2.59	1.307		2.45	1.453		1.94	1.593	18	2.71	1.384
	1.30	1.553		1.95	1.412		2.28	1.476	3	2.13	1.507		2.45	1.418
6	1.76	1.464		1.75	1.439		2.00	1.518		2.08	1.490		2.27	1.443
	1.59	1.487		1.61	1.456		1.93	1.528		2.00	1.493		2.12	1.468
	1.46	1.530		1.51	1.480	6	4.88	1.207		1.95	1.519		1.92	1.498
	1.38	1.545	25	2.43	1.399		4.37	1.250	4	4.96	1.305	19	4.92	1.235
	1.30	1.551		2.06	1.451		3.87	1.302		4.42	1.299		4.32	1.285

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1924—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*		
Jan. 19	3.50	1.363	Feb. 4	2.28	1.484	Feb. 21	2.00	1.471	Mar. 7	1.38	1.498	Mar. 26	4.79	1.121
	2.69	1.469		2.15	1.498		1.90	1.487	8	1.49	1.544		4.10	1.139
	2.30	1.514		1.69	1.556	22	2.70	1.316		1.42	1.550		3.35	1.258
	2.00	1.562		1.66	1.559		2.44	1.349		1.31	1.560		2.70	1.343
20	2.05	1.548	6	2.70	1.374		2.15	1.391	9	1.51	1.498		2.00	1.445
	1.95	1.557	9	1.69	1.522		2.00	1.404		1.42	1.521		1.33	1.563
	1.88	1.568		1.65	1.531		1.84	1.443		1.37	1.533	27	1.91	1.419
	1.81	1.581		1.63	1.540	23	2.68	1.385		1.33	1.541	29	2.68	1.313
22	1.70	1.488		1.58	1.549		2.43	1.416		1.30	1.549		2.32	1.358
23	2.44	1.440		1.56	1.551		2.15	1.450	10	1.27	1.571		2.00	1.398
	2.20	1.474	10	2.70	1.375		2.00	1.470		1.29	1.572		1.83	1.419
	2.06	1.494		2.44	1.410		1.85	1.498		1.35	1.545		1.69	1.460
	1.95	1.513		2.15	1.452	24	2.69	1.415	11	2.25	1.371	30	2.70	1.168
	1.78	1.523		2.00	1.473		2.39	1.464		2.00	1.405		2.30	1.255
24	2.71	1.394		1.85	1.493		1.38	1.484		1.83	1.439		2.00	1.335
	2.30	1.446	11	2.70	1.321	25	2.63	1.416		1.68	1.473		1.83	1.380
	2.00	1.489		2.45	1.351		2.43	1.475		1.57	1.501		1.69	1.438
	1.85	1.504		2.15	1.373		2.14	1.477	12	1.62	1.480	31	2.70	1.301
	1.78	1.522		2.00	1.385		2.00	1.487	13	1.34	1.543		2.30	1.363
25	2.69	1.434		1.85	1.420		1.84	1.518		1.30	1.549		2.00	1.408
	2.45	1.466	12	4.88	1.232	26	1.55	1.473		1.28	1.550		1.73	1.448
	2.23	1.491		4.31	1.275		1.51	1.485		1.26	1.559		1.50	1.489
	2.00	1.532		3.77	1.332		1.45	1.499		1.25	1.568	Apr. 1	2.69	1.253
	1.90	1.549		3.23	1.389		1.42	1.506	14	1.63	1.543		2.29	1.312
26	2.69	1.442		2.69	1.458		1.40	1.510		1.78	1.480		2.00	1.361
	2.45	1.470		2.00	1.542	27	4.85	1.162		1.93	1.455		1.69	1.421
	2.15	1.508		1.85	1.562		4.24	1.226		2.13	1.429		1.50	1.463
	2.00	1.529	13	2.70	1.412		3.70	1.275	15	2.30	1.289	2	2.70	1.343
	1.85	1.552		2.45	1.432		3.18	1.316		2.04	1.344		2.32	1.390
27	2.70	1.378		2.00	1.519		2.69	1.377		1.86	1.389		2.00	1.442
	2.40	1.427		1.84	1.545		1.99	1.499		1.68	1.417	3	2.80	1.232
	2.28	1.439		1.70	1.571		1.84	1.515		1.57	1.444		2.45	1.283
28	2.45	1.369	14	2.70	1.314	28	2.69	1.355	16	2.43	1.428		2.18	1.323
	2.35	1.380		2.45	1.346		2.44	1.407		2.18	1.465	4	1.15	1.532
	2.21	1.400		2.15	1.399		2.30	1.425		1.99	1.490		1.14	1.541
	2.00	1.442		2.00	1.413		2.15	1.445		1.70	1.528		1.13	1.554
	1.85	1.464		1.85	1.448		2.00	1.463		1.60	1.536	5	2.80	1.198
29	4.89	1.169	15	2.12	1.440	29	1.94	1.469	17	1.73	1.425		2.44	1.253
	4.33	1.222	16	2.70	1.364		1.70	1.504		1.67	1.450		2.00	1.319
	3.80	1.263		2.45	1.396		1.55	1.529		1.55	1.481		1.83	1.346
	3.25	1.322		2.16	1.443		1.45	1.543		1.42	1.507		1.68	1.373
	2.70	1.388		1.99	1.470		1.38	1.562	19	4.87	1.033	7	2.80	1.227
	2.15	1.469		1.85	1.492	Mar. 1	1.97	1.472		4.14	1.100		2.44	1.275
	2.00	1.489	17	2.70	1.302	2	2.17	1.401		3.36	1.198		1.99	1.343
30	1.61	1.590		2.45	1.335		1.88	1.456		2.69	1.280		1.82	1.373
	1.64	1.584		2.16	1.379		1.67	1.485		1.96	1.390		1.51	1.433
	1.71	1.565		2.00	1.408		1.43	1.530		1.40	1.499	9	2.82	1.116
	1.91	1.552		1.84	1.449		1.37	1.546	20	2.70	1.272		2.45	1.178
31	2.69	1.465	18	2.70	1.344	3	1.33	1.571		2.51	1.300		2.19	1.227
	2.45	1.492		2.45	1.379	4	1.90	1.383		2.35	1.332		1.97	1.266
	2.10	1.502		2.15	1.426		1.74	1.415		2.05	1.364		1.81	1.305
	1.99	1.522		2.00	1.450	5	2.43	1.352		1.94	1.377	10	2.05	1.329
	1.85	1.578		1.85	1.476		2.05	1.417	22	2.71	1.307	12	4.70	0.982
Feb. 1	2.70	1.433	19	4.86	1.224		1.89	1.447		2.15	1.389		4.10	1.046
	2.45	1.452		4.23	1.270		1.73	1.475		2.00	1.414		3.34	1.137
	2.28	1.477		3.42	1.355		1.62	1.494		1.77	1.421		2.71	1.221
	2.17	1.494		2.70	1.441	6	1.55	1.570		1.58	1.498		2.00	1.328
	2.00	1.526		2.00	1.536		1.40	1.592	23	1.26	1.528		1.37	1.452
2	1.67	1.565		1.52	1.599		1.35	1.594		1.24	1.534	13	2.69	1.190
	1.64	1.567	20	2.39	1.398		1.31	1.599		1.20	1.541		2.35	1.243
	1.60	1.577		2.53	1.391		1.30	1.600	24	2.70	1.350		2.00	1.302
3	1.61	1.572		2.72	1.411	7	1.72	1.449		2.45	1.360		1.82	1.332
	1.59	1.585	21	2.70	1.370		1.60	1.465		2.22	1.396		1.68	1.352
	1.58	1.587		2.46	1.400		1.51	1.481		2.00	1.439	14	2.70	1.200
4	2.45	1.457		2.15	1.448		1.43	1.494		1.91	1.455		2.30	1.273

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1924—*Cont'd*		
Apr. 14	2.00	1.325
	1.70	1.385
	1.50	1.414
15	2.08	1.394
	1.89	1.427
	1.72	1.455
	1.24	1.485
	1.20	1.527
16	2.70	1.366
	2.31	1.413
	2.00	1.452
	1.70	1.513
	1.50	1.533
17	2.70	1.343
	2.30	1.400
	2.00	1.441
	1.50	1.509
	1.30	1.547
18	2.70	1.324
	2.30	1.384
	2.01	1.431
	1.49	1.522
	1.30	1.556
19	2.70	1.337
	2.30	1.392
	2.00	1.437
	1.50	1.513
	1.30	1.524
20	2.47	1.326
	1.62	1.467
	1.50	1.484
	1.42	1.501
	1.35	1.521
21	2.80	1.246
	2.43	1.304
	2.16	1.342
	1.92	1.385
	1.76	1.418
22	1.10	1.580
	1.08	1.584
	1.07	1.587
23	2.65	1.279
	2.31	1.327
	2.00	1.391
	1.50	1.478
	1.30	1.544
25	2.70	1.065
	2.29	1.125
	2.00	1.168
	1.76	1.240
	1.63	1.295
	1.30	1.544
26	1.13	1.510
	1.10	1.521
	1.09	1.529
	1.08	1.531
	1.07	1.538
27	2.00	1.329
	1.79	1.371
	1.65	1.398
28	2.70	1.231
	2.30	1.308
	2.00	1.371
	1.50	1.460
	1.44	1.462
Apr. 29	2.70	1.270
	2.30	1.327
	2.00	1.373
	1.50	1.457
	1.30	1.495
30	2.00	1.336
	1.70	1.388
	1.50	1.427
	1.42	1.445
	1.30	1.467
May 1	4.78	0.858
	4.16	0.923
	3.40	1.023
	2.70	1.129
	1.99	1.242
	1.30	1.392
2	2.00	1.204
	1.70	1.265
	1.50	1.308
	1.41	1.329
	1.30	1.361
3	1.39	1.336
	1.30	1.361
	1.24	1.379
	1.20	1.392
	1.16	1.404
5	2.00	1.386
	1.71	1.427
	1.50	1.457
	1.41	1.466
	1.30	1.481
6	1.76	1.357
	1.63	1.375
	1.50	1.404
	1.41	1.422
	1.30	1.447
7	2.00	1.424
	1.70	1.462
	1.50	1.499
	1.41	1.512
	1.30	1.529
8	2.01	1.335
	1.70	1.395
	1.50	1.428
	1.41	1.449
	1.30	1.470
9	2.11	1.345
	1.91	1.381
	1.70	1.406
	1.50	1.441
	1.30	1.481
10	4.77	0.983
	4.17	1.046
	3.40	1.147
	2.70	1.249
	2.00	1.370
	1.30	1.491
11	1.61	1.395
	1.50	1.406
	1.42	1.413
	1.35	1.432
	1.26	1.454
12	2.00	1.441
	1.70	1.479
	1.50	1.527
May 12	1.41	1.540
	1.30	1.554
13	2.00	1.365
	1.71	1.429
	1.50	1.482
	1.41	1.491
	1.30	1.516
14	2.00	1.373
	1.70	1.424
	1.50	1.451
	1.41	1.454
	1.30	1.479
15	2.00	1.337
	1.70	1.395
	1.50	1.423
	1.41	1.448
	1.30	1.472
16	1.67	1.409
	1.55	1.431
	1.45	1.441
	1.37	1.456
	1.30	1.470
17	2.00	1.294
	1.79	1.331
	1.54	1.376
	1.44	1.395
	1.30	1.418
18	1.62	1.306
	1.51	1.332
	1.42	1.349
	1.35	1.367
	1.28	1.384
19	1.48	1.380
	1.04	1.503
	1.03	1.504
20	2.00	1.351
	1.70	1.402
	1.50	1.437
	1.41	1.454
	1.30	1.474
21	1.50	1.484
	1.41	1.492
	1.30	1.512
	1.24	1.521
	1.19	1.534
22	4.72	1.141
	4.14	1.194
	3.39	1.266
	2.71	1.351
	2.00	1.435
	1.30	1.521
23	2.23	1.331
	2.00	1.373
	1.83	1.404
	1.66	1.430
	1.50	1.463
24	1.08	1.508
	1.06	1.509
	1.05	1.516
	1.04	1.524
	1.03	1.524
25	1.57	1.397
	1.47	1.413
	1.38	1.431
	1.30	1.448
May 25	1.24	1.460
26	1.35	1.418
	1.29	1.423
	1.23	1.432
	1.17	1.448
	1.13	1.461
27	1.60	1.448
	1.49	1.462
	1.40	1.485
	1.30	1.512
	1.24	1.527
28	1.60	1.347
	1.46	1.376
	1.33	1.413
	1.26	1.425
29	2.04	1.285
	1.87	1.318
	1.72	1.347
	1.51	1.377
	1.30	1.424
31	1.18	1.432
	1.16	1.440
	1.13	1.451
	1.11	1.461
	1.09	1.474
June 1	1.99	1.288
	1.85	1.324
	1.70	1.343
	1.50	1.376
	1.30	1.420
2	1.97	1.179
	1.85	1.212
	1.70	1.242
	1.50	1.285
	1.46	1.308
3	2.01	1.228
	1.85	1.259
	1.70	1.286
	1.50	1.318
	1.45	1.353
4	2.79	1.406
	1.49	1.423
	1.44	1.429
	1.37	1.438
	1.30	1.449
5	1.85	1.326
	1.70	1.345
	1.50	1.385
	1.30	1.432
6	2.01	1.382
	1.85	1.412
	1.70	1.435
	1.50	1.472
	1.30	1.518
7	2.01	1.364
	1.86	1.379
	1.70	1.407
	1.50	1.419
	1.30	1.459
8	2.00	1.224
	1.86	1.246
	1.70	1.292
	1.50	1.332
	1.30	1.375
9	2.01	1.303
June 9	1.85	1.323
	1.70	1.363
	1.50	1.394
	1.30	1.441
10	1.93	1.396
	1.84	1.413
	1.74	1.429
	1.54	1.453
	1.49	1.466
11	2.28	1.258
	2.01	1.281
	1.70	1.309
	1.63	1.317
	1.39	1.363
12	2.69	1.127
	2.44	1.170
	2.00	1.271
	1.86	1.292
	1.50	1.340
13	1.15	1.406
	1.03	1.415
	1.02	1.436
14	4.91	0.899
	4.29	0.962
	3.43	1.063
	2.71	1.139
	2.00	1.274
	1.30	1.403
15	4.86	0.956
	4.26	1.010
	3.41	1.095
	2.70	1.199
	2.00	1.305
	1.30	1.423
16	2.30	1.311
	2.15	1.328
	2.00	1.360
	1.86	1.369
	1.70	1.407
17	2.00	1.408
	1.86	1.427
	1.70	1.449
	1.50	1.472
	1.30	1.505
18	2.29	1.388
	2.00	1.432
	1.84	1.459
	1.70	1.490
	1.50	1.504
19	4.93	1.038
	4.31	1.079
	3.44	1.170
	2.69	1.253
	2.00	1.374
	1.30	1.498
20	4.87	1.039
	4.20	1.099
	3.42	1.187
	2.70	1.286
	2.00	1.395
	1.30	1.504
21	4.88	1.076
	4.21	1.132
	3.46	1.207
	2.70	1.302

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.	Date	Air mass	Pyrh.
1924—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*			**1924**—*Cont'd*		
June 21	2.01	1.398	July 10	1.83	1.290	July 29	1.95	1.315	Sept. 8	1.68	1.268	Sept. 25	2.45	1.399
	1.30	1.504		1.68	1.311	Aug. 2	1.98	1.376		1.53	1.296		2.00	1.462
22	2.01	1.346		1.40	1.360		2.22	1.328	11	4.74	1.010		1.85	1.487
	1.85	1.365		1.30	1.376		2.50	1.281		4.14	1.074		1.30	1.619
	1.50	1.413	11	2.00	1.218	21	2.00	1.370		3.38	1.165	26	2.70	1.326
	1.38	1.421		1.82	1.244		1.82	1.401		2.70	1.258		2.45	1.357
	1.30	1.456		1.68	1.265		1.67	1.432		2.00	1.365		2.00	1.421
23	2.59	1.185		1.50	1.307		1.50	1.457		1.30	1.467		1.85	1.439
	2.30	1.236		1.41	1.324		1.30	1.485	12	2.70	1.256		1.30	1.533
	2.00	1.289	12	1.03	1.513	22	2.69	1.206		2.36	1.305	27	2.69	1.348
	1.86	1.307		1.42	1.463		2.36	1.255		2.00	1.361		2.46	1.385
	1.30	1.432		1.51	1.444		2.01	1.317		1.84	1.397		2.01	1.442
24	4.85	0.889	14	2.00	1.298		1.50	1.417		1.30	1.488		1.86	1.464
	4.20	0.963		1.83	1.331		1.30	1.454	13	2.70	1.249		1.30	1.561
	3.45	1.048	16	2.70	1.184	23	1.25	1.361		2.37	1.294	28	2.69	1.358
	2.72	1.134		2.36	1.239		1.21	1.365		2.00	1.348		2.46	1.374
	2.00	1.243		1.99	1.294		1.17	1.364		1.76	1.391		2.01	1.448
	1.30	1.384		1.82	1.321	24	2.70	1.184		1.30	1.488		1.85	1.469
25	4.88	0.945		1.67	1.348		2.31	1.244	14	1.36	1.434		1.30	1.552
	4.20	1.014	17	4.80	1.028		2.00	1.290		1.31	1.448	29	2.00	1.435
	3.44	1.103		4.19	1.084		1.83	1.325		1.27	1.459		1.85	1.459
	2.69	1.194		3.43	1.157		1.68	1.353		1.23	1.467		1.25	1.557
	2.00	1.293		2.71	1.237	25	1.72	1.333		1.20	1.467		1.24	1.567
	1.30	1.407		2.00	1.318		1.57	1.358	16	1.17	1.463	30	2.70	1.347
26	2.70	1.128		1.30	1.435		1.47	1.382		1.18	1.465		2.45	1.404
	2.15	1.214	18	2.25	1.300		1.39	1.392		1.20	1.453		2.23	1.423
	2.00	1.227		2.00	1.334		1.30	1.405		1.22	1.444		2.01	1.461
	1.86	1.259		1.83	1.351	26	2.70	1.196	17	2.68	1.244		1.85	1.492
	1.57	1.290		1.68	1.402		2.38	1.247		2.23	1.314	Oct. 1	2.70	1.258
27	1.05	1.440		1.30	1.456		2.00	1.302		2.01	1.352		2.45	1.292
	1.04	1.450	19	4.64	1.022		1.82	1.324		1.70	1.411		2.15	1.330
28	1.56	1.191		4.07	1.075		1.30	1.422		1.30	1.488		2.00	1.350
	1.50	1.200		3.35	1.154	27	4.73	0.859	18	2.69	1.263		1.85	1.377
	1.37	1.239		2.70	1.243		4.12	0.938		2.26	1.327	2	2.79	1.246
	1.17	1.250		2.01	1.355		3.36	1.034		2.00	1.376		1.30	1.508
	1.15	1.259		1.30	1.477		2.70	1.113		1.70	1.441		1.28	1.513
29	1.08	1.259	20	4.74	1.073		2.00	1.244		1.30	1.501		1.27	1.522
	1.04	1.262		4.15	1.131		1.30	1.372	19	4.70	0.945	3	4.79	1.109
	1.03	1.270		3.40	1.193	28	2.62	1.100		4.03	1.026		4.12	1.163
	1.02	1.271		2.71	1.256		2.31	1.152		3.38	1.113		3.39	1.234
30	1.20	1.282		2.00	1.367		2.00	1.190		2.70	1.195		2.70	1.312
	1.22	1.274		1.30	1.378		1.82	1.215		2.00	1.318		2.00	1.414
	1.26	1.250	21	4.78	1.032		1.30	1.363		1.30	1.471		1.30	1.526
	1.50	1.184		4.18	1.091	29	2.01	1.139	21	2.70	1.261	4	2.70	1.263
July 1	1.48	1.205		3.42	1.176		1.83	1.186		2.43	1.307		2.46	1.297
	1.43	1.224		2.70	1.264		1.68	1.232		2.00	1.381		2.01	1.354
	1.39	1.240		2.00	1.366		1.50	1.267		1.85	1.414		1.85	1.374
	1.18	1.260		1.30	1.487		1.30	1.324		1.30	1.516		1.30	1.511
	1.15	1.284	22	2.69	1.288	30	2.70	1.079	22	2.70	1.313	5	2.15	1.360
4	1.07	1.291		2.36	1.330		2.36	1.135		2.47	1.338		2.01	1.388
	1.42	1.220		2.00	1.379		2.00	1.182		2.00	1.421		1.85	1.427
	1.50	1.195		1.62	1.446		1.82	1.220		1.85	1.437		1.70	1.454
6	1.07	1.345	27	1.66	1.248		1.30	1.309		1.30	1.506		1.50	1.488
	1.06	1.351	28	1.58	1.330	Sept. 3	1.64	1.204	23	2.70	1.233	7	2.47	1.357
	1.05	1.353		1.48	1.360		1.54	1.216		2.45	1.277		2.15	1.389
	1.04	1.349		1.39	1.384		1.45	1.227		2.00	1.351		2.01	1.416
	1.03	1.359		1.33	1.395	6	2.69	1.130		1.85	1.377		1.50	1.493
8	1.99	1.215		1.26	1.403		2.39	1.172		1.30	1.470		1.40	1.510
	1.45	1.310	29	2.78	1.190		1.76	1.305	24	4.78	1.110	8	4.80	1.118
	1.40	1.329		2.43	1.240		1.63	1.333		4.08	1.176		4.14	1.180
	1.36	1.344		2.16	1.249		1.41	1.369		3.39	1.261		3.37	1.270
	1.32	1.356		1.95	1.315	7	1.46	1.245		2.70	1.314		2.69	1.351
9	1.31	1.376	29	2.78	1.190		1.39	1.266		2.00	1.416		1.99	1.436
	1.37	1.360		2.43	1.240		1.33	1.275		1.30	1.519		1.53	1.511
10	2.01	1.264		2.16	1.249	8	2.03	1.127	25	2.70	1.357	10	2.00	1.516

TABLE 10.—*Pyrheliometer data, Mount Harqua Hala, Arizona*—Continued

Date	Air mass	Pyrh.
1924—*Cont'd*		
Oct. 10	1.70	1.545
	1.50	1.555
	1.46	1.557
11	2.69	1.404
	2.47	1.429
	2.00	1.487
	1.85	1.515
	1.35	1.615
12	2.69	1.410
	2.46	1.432
	2.15	1.478
	1.70	1.543
	1.50	1.572
13	2.70	1.380
	2.45	1.404
	2.15	1.435
	2.00	1.457
	1.85	1.483
14	1.45	1.564
	1.43	1.563
	1.38	1.568
	1.37	1.577
	1.36	1.581
15	4.94	1.209
	4.25	1.260
	3.39	1.346
	2.71	1.421
	2.00	1.514
	1.36	1.603
16	2.44	1.408
	2.15	1.427
	2.00	1.461
	1.89	1.476
	1.82	1.494
17	2.70	1.427
	2.45	1.460
	2.15	1.513
	2.00	1.543
	1.86	1.551
18	2.71	1.410
	2.45	1.432
	2.15	1.477
	2.00	1.494
	1.82	1.501
19	2.45	1.424
	2.16	1.461
	1.99	1.483
	1.69	1.537
	1.46	1.556
20	2.21	1.428
	1.90	1.470
	1.68	1.499
	1.54	1.525
	1.44	1.537
Oct. 21	4.87	1.157
	4.22	1.219
	3.45	1.296
	2.70	1.394
	2.00	1.480
	1.45	1.553
22	2.70	1.365
	2.45	1.431
	2.32	1.446
	2.00	1.496
	1.68	1.537
23	2.55	1.370
	2.13	1.432
	1.84	1.480
	1.67	1.508
	1.55	1.525
24	2.69	1.326
	2.40	1.371
	2.18	1.401
	2.01	1.428
	1.85	1.459
25	2.70	1.276
	2.44	1.310
	2.15	1.353
	2.01	1.373
	1.86	1.392
26	1.58	1.455
	1.54	1.490
	1.52	1.497
	1.47	1.512
27	2.69	1.372
	2.45	1.408
	2.15	1.440
	2.00	1.451
	1.85	1.478
28	2.26	1.417
	2.13	1.454
	2.00	1.459
	1.80	1.478
	1.70	1.494
30	1.62	1.557
	1.66	1.547
	1.72	1.534
31	4.88	1.193
	4.24	1.250
	3.46	1.332
	2.70	1.424
	2.00	1.513
	1.50	1.580
Nov. 2	2.70	1.292
	2.45	1.326
	2.15	1.374
	2.01	1.391
	1.85	1.411
Nov. 3	1.55	1.461
	1.52	1.470
4	2.20	1.391
	1.95	1.431
	1.77	1.466
	1.66	1.488
	1.59	1.497
5	1.92	1.457
	1.85	1.470
6	2.70	1.418
	2.46	1.447
	2.16	1.491
	2.00	1.508
	1.85	1.531
7	4.94	1.220
	4.36	1.262
	3.82	1.308
	3.14	1.388
	2.70	1.441
	2.01	1.518
	1.85	1.550
8	1.59	1.516
	1.64	1.510
	1.67	1.503
11	2.80	1.407
	2.63	1.424
	2.45	1.437
	2.30	1.470
	2.15	1.482
12	2.10	1.466
	1.94	1.495
	1.76	1.535
	1.68	1.544
	1.61	1.551
13	1.76	1.487
14	2.64	1.375
	2.30	1.420
	2.05	1.458
	1.88	1.490
	1.76	1.505
16	1.93	1.462
	1.86	1.474
	1.72	1.504
	1.67	1.515
17	2.66	1.395
	2.40	1.431
	2.06	1.478
	1.90	1.501
	1.81	1.517
18	5.15	1.164
	4.55	1.218
	3.97	1.267
	3.35	1.338
	2.69	1.405
Nov. 18	2.00	1.510
	1.85	1.526
19	2.69	1.417
	2.45	1.444
	2.30	1.463
	2.15	1.485
	1.98	1.503
21	2.65	1.418
	2.33	1.456
	2.09	1.484
	1.93	1.505
	1.83	1.518
23	2.70	1.468
	2.45	1.504
	2.30	1.529
	2.15	1.556
	1.95	1.572
24	5.12	1.264
	4.52	1.308
	3.98	1.354
	3.32	1.414
	2.70	1.498
	2.15	1.563
	2.01	1.579
25	2.27	1.489
	2.16	1.506
	2.00	1.512
	1.93	1.524
	1.85	1.529
27	2.80	1.407
	2.61	1.432
	2.45	1.458
	2.30	1.466
	2.16	1.488
28	2.40	1.503
	1.94	1.571
	1.99	1.559
	2.08	1.543
29	2.70	1.460
	2.46	1.494
	2.36	1.509
	2.22	1.522
	2.15	1.536
30	2.80	1.309
	2.61	1.338
	2.45	1.355
	2.30	1.367
	2.15	1.393
Dec. 1	2.61	1.332
	2.45	1.344
	2.30	1.379
	2.17	1.394
3	5.14	1.221
	4.55	1.269
Dec. 3	4.00	1.315
	3.35	1.385
	2.70	1.474
	2.15	1.534
	2.01	1.543
9	2.70	1.472
	2.47	1.501
	2.30	1.528
	2.15	1.546
	2.05	1.553
11	4.94	1.191
	4.37	1.237
	3.50	1.321
	2.70	1.413
	2.00	1.509
	1.94	1.518
12	2.80	1.406
	2.56	1.435
	2.38	1.460
	2.22	1.481
	2.11	1.496
13	2.54	1.401
	2.25	1.478
	2.10	1.501
	1.97	1.519
	1.89	1.529
14	2.25	1.442
	2.18	1.446
	2.08	1.460
	2.00	1.467
	1.96	1.473
19	1.85	1.581
	1.87	1.580
	2.06	1.561
	2.23	1.532
	2.40	1.504
23	2.05	1.590
	1.95	1.601
	1.89	1.605
25	1.85	1.622
	1.87	1.620
27	2.63	1.503
	2.18	1.544
	2.03	1.565
	1.93	1.584
	1.88	1.597
29	4.92	1.201
	4.38	1.247
	3.49	1.336
	2.69	1.430
	2.20	1.497
	2.00	1.525
31	2.46	1.454
	2.26	1.478

CHAPTER 5

Other Instruments

Pyranometer

The pyranometer,[12] used in all short-method solar-constant observations to measure the brightness of the sky in a zone around the sun, has been found adaptable to many purposes. One such purpose is as a connecting link between the silver-disk direct-solar measurements and the Eppley pyrheliometer which measures the global or total sun and sky radiation. In the special radiation measurements mentioned in chapter 6 (see p. 144) a number of Eppley pyrheliometers were used and a simple means was needed for checking their calibrations. The pyranometer is easily compared with the silver-disk pyrheliometer by mounting it equatorially, as is the silver-disk instrument, and covering it with the special hood, furnished with the instrument, which exposes the pyranometer strip to the same area of sun and sky as the silver-disk instrument sees. Having thus calibrated the pyranometer, the hood is removed and the pyranometer is exposed to the whole hemisphere of sky exactly as is the Eppley. The readings of the pyranometer mounted horizontally have been compared against a normally mounted silver-disk pyrheliometer at air masses from 1.0 to 4.0. The pyranometer readings follow the cosine law within less than 1 percent (Ann. Astrophys. Obs., vol. 4, p. 73, 1922).

The U. S. Weather Bureau operates a network of Eppley pyrheliometers in various sections of the country. Because of difficulty in maintaining satisfactory calibrations the Bureau recently made comparisons against one of our pyranometers with very consistent results. The use of the pyranometer may indeed become standard practice to reduce Eppley readings to the Smithsonian Scale of 1913.

In addition to this adaptation of the pyranometer as a connecting link between Eppley and silver-disk pyrheliometers, the pyranometer is useful in other ways. It is light and easily adjusted to any position. A single reading is made in 10 seconds. It has been used to determine the reflecting power of clouds and to measure the radiation from sun and sky during a total eclipse.

A very recent adaptation is referred to in chapter 2 (p. 21), namely, a pyranometer with a device for quickly inserting any one of four filters limiting the radiation to a definite wavelength band. The filters used are (1) vycor, transmitting all wavelengths out to about 5 microns, (2) glass, transmitting no radiation less than $.4\mu$, (3) yellow glass, cutting off radiation less than $.525\mu$, and (4) red, cutting off at $.65\mu$. These are mounted on a disk at the base of the regular hood used in solar-constant short-method observations. This hood limits the exposed sky to a ring 10° wide concentric with the sun, the middle of the band being 8° 30′ from the solar limb.

Atmospheric haze is caused by small particles of dust which scatter radiation from the direct solar beam. The spectral distribution of this scattered radiation is no doubt altered as the average size of the dust particles changes. We anticipate that such changes in spectral distribution, causing different types of haze, can be roughly measured by the 4-filter pyranometer. This information should permit more accurate transmission coefficients to be assigned to a given type of sky. Applied to our short-method reductions, improved transmission coefficients will yield more accurate solar constants. Observations with the 4-filter pyranometer during regular bolographs are now in progress at Table Mountain.

Mechanical integrator for a Brown potentiometer recorder

Some of the solar radiation measurements at Camp Lee, Va., were made with four Eppley pyrheliometers connected to a Brown 4-point strip-chart recorder. This recorder traveled full scale in 24 seconds and switched points every 30 seconds. About 2 man-hours a day were required to read the charts and reduce the results to langleys per day. As no integrating device was available at the time, one was designed in the Astrophysical Observatory and built in our shop by Mr. D. G. Talbert. The completed integrator, mounted on the rear of the chassis of the Brown recorder, is shown in plate 6. The lower left figure in plate 6 shows the driving gears on the rear of the integrator.

The large gear shown in plate 6 was keyed to the same shaft as the cable drum which drives the slide wire contactor, pointer, and printing device. Thus the large gear would rotate through the same angle as the cable drum. A rotation of the cable drum equivalent to a full-scale deflection on the recorder rotated the four small gears exactly 10 revolutions. On the opposite end of each small gear shaft is a small cup, two of which are shown in the lower right figure in plate 6. By means of cams, small counters could be moved to engage the cups. Thus any motion of the cable drum would be registered on the counters. Full-scale motion changed the counter reading by 100. The cams were driven by the chart motor and each camshaft made one revolution in 3 minutes.

Since the Brown recorder in use was a four-point instrument with a printing cycle of 2 minutes, it was changed to a 6-point instrument with a printing cycle of 3 minutes.

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[12] Described in Smithsonian Misc. Coll., vol. 66, Nos. 7, 11, 1916.

Points 1, 2, 4, and 5 were connected to the four Eppley pyrheliometers and points 3 and 6 were shorted. Thus, when the instrument switched to either of these two points it would return to the zero position.

Cam one is set to engage counter one when point 6 is printed and to disengage the counter when point 1 is printed; cam two engages counter two when point 2 is printed and disengages the counter when point 3 is printed; cam three engages counter three when point 3 is printed and disengages the counter when point 4 is printed; cam four engages counter four when point 5 is printed and disengages the counter when point 6 is printed. The cycle then repeats. Thus counters one and three record while the instrument moves from the zero position to the point and counters two and four record while the instrument is moving in the opposite direction.

In our work each counter was read at the end of each day. The difference between the counter reading from day to day multiplied by a constant reduced the results to langleys per day. In addition to saving about 1½ man-hours of work a day the results were more accurate than results from the charts.

Three of these integrators have been in use about 4 years and they have given very good service.

Recorder of sky steadiness

It has at times been noted, particularly at Table Mountain, that the pyrheliometer readings, even in what appears to be a good, clear sky, will fluctuate irregularly. These fluctuations we suppose are due to invisible clouds of water vapor. Since it is difficult to recognize this type of sky during the observations, we have devised an instrument to record independently the steadiness of the radiation being received. It consists of a sensitive thermoelement attached to a small, blackened metallic absorbing surface. This is exposed in the coelostat beam during each bolograph and the galvanometer deflection is recorded on photographic paper on a rotating drum. Samples of the records of two types of sky are shown in figures 6 and 7. The zero of the galvanometer is shown at the beginning and end of each bolograph, and the deflection due to sun and surrounding sky is a continuous line for the duration of the bolograph, $7^m\,20^s$. The record of June 24 shows an unsatisfactory sky with irregular fluctuations. The May 9 record shows a long-method day with 6 bolographs, each one of which shows far more steadiness of sky.

These records are now made during all bolographs, and they furnish valuable independent evidence as to the uniformity of the observing sky. Recently an electronic photopen recorder has replaced the photographic record.

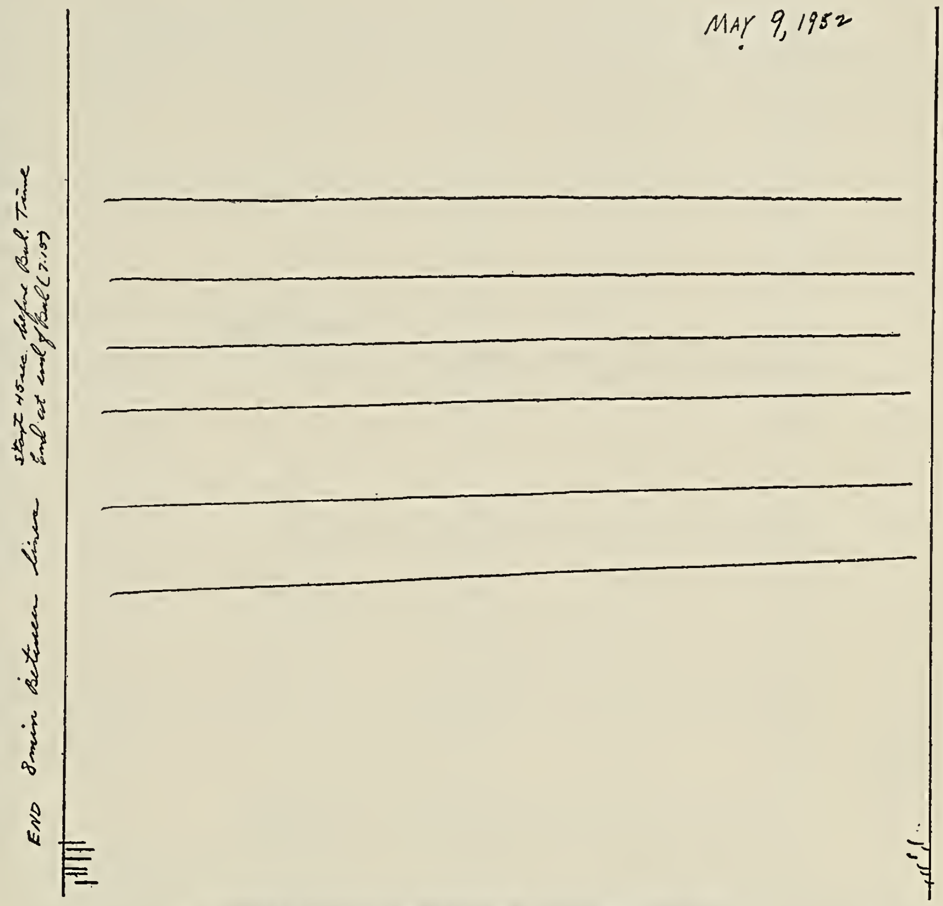

FIGURE 6.—Sky steadiness record of good sky.

The Harvard Photometer

In March 1948 Dr. Menzel of Harvard College Observatory wrote that their High Altitude Observatory had developed a very sensitive sky photometer [13] for measuring the brightness of the sky. He felt that this new instrument with proper calibration might prove of value in our solar-constant work and very kindly offered to lend one to us.

In December 1948 Harvard visual sky photometer VSP–2 was received from Dr. Roberts of the High Altitude Observatory, Boulder, Colo. During the following year the photometer was tested at Washington and a stable mounting prepared with slow-motion adjustments so that proper pointing could easily be maintained. In December 1949 it was sent to Table Mountain, Calif., for careful comparisons with our regular pyranometer. Due to many interruptions it was not until September 1950 that satisfactory work with the photometer was begun.

During the period September 1950 through June 1951 many simultaneous readings were made of the Harvard photometer and the pyranometer. In the earlier comparisons small air masses were used in general. Beginning March 31, 1951, observations were made simultaneously with the regular solar-constant bolographs. Each time the pyranometer was read a setting was also made on the photometer. During each bolograph five settings were made.

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[13] Described in an article by Dr. John W. Evans, Journ. Opt. Soc. Amer., vol. 38, p. 1083, December 1948.

The sky photometer measures the brightness of the solar halo 9 minutes of arc from the solar limb, expressed in terms of millionths of the brightness of the solar surface. The pyranometer measures in langleys per minute the brightness of a band of sky approximately 10° wide concentric with the sun, the middle of this band being 8° 30′ from the solar limb. The photometer thus measures a narrow ring of sky very near the sun, and the pyranometer a wide ring about 60 times farther from the sun.

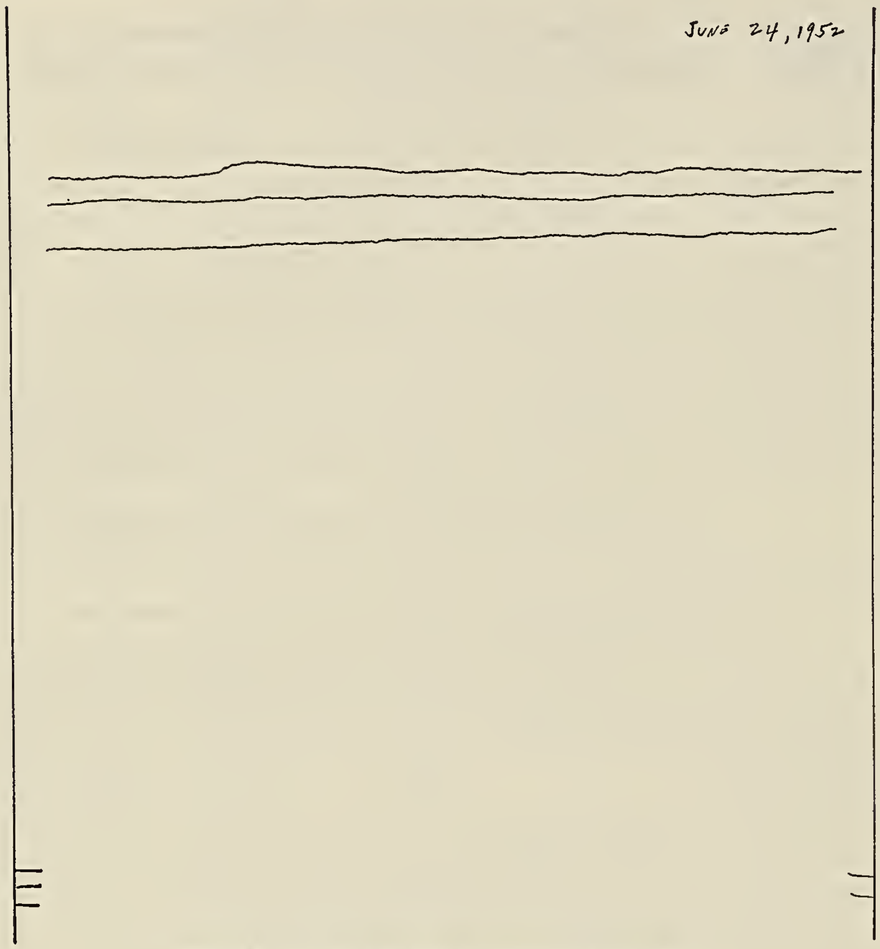


FIGURE 7.—Sky steadiness record of poor sky.

Simultaneous photometer and pyranometer observations were made on 44 days (see table 11). The last 19 of these were taken simultaneously with the solar-constant bolographs. In all there are some 90 values, each value being a mean of 3 to 12 individual settings of both the photometer and the pyranometer.

Of these 90 values, 32 were selected which, from the character of the sky as expressed in the observer's notes, appeared best. These are marked (x) in table 11. They are plotted in figure 8a and the best line drawn through the points. In figure 8b the same straight line is drawn, but the points are those of the 54 values taken March 31 through June 13 during regular bolographs. A number of these points lie at considerable distance from the line which in good skies represents the relationship between the photometer and the pyranometer. Assuming that the photometer, because it measures the sky brightness so much nearer the sun, is a more correct indication of the atmospheric transmission than is the pyranometer, we may correct the pyranometer values to what they would be if in terms of the photometer values. In table 12, column 5 gives these corrected pyranometer values.

On 3 days (March 31, April 9, and April 22) these new equivalent pyranometer values, obtained by assuming the photometer values were correct, were substituted for the regular pyranometer values and the short-method solar constants re-reduced. The results are given in column 7 of table 12. In each case increase of the pyranometer value resulted in a larger solar constant, and vice versa.

In column 8 of table 12, the effect on the solar constant is shown through use of the equivalent pyranometer value obtained from the plot of curve *b* of figure 8. In summary, the solar constants on 5 days appear to be improved. On 5 days the solar constants remained unchanged. On 9 days the solar constants were apparently made worse.

The data are not sufficient to settle the question. We have asked our field staff to obtain further comparisons in good skies. When these have been received we hope to find a more definite indication of the relative value of the photometer and pyranometer readings as applied to our short-method solar-constant values. Certainly one would expect that the photometer, which measures sky brightness much nearer the sun, would be a better instrument to indicate the amount of scattered light lost from the direct solar beam. We await the further comparisons with interest.

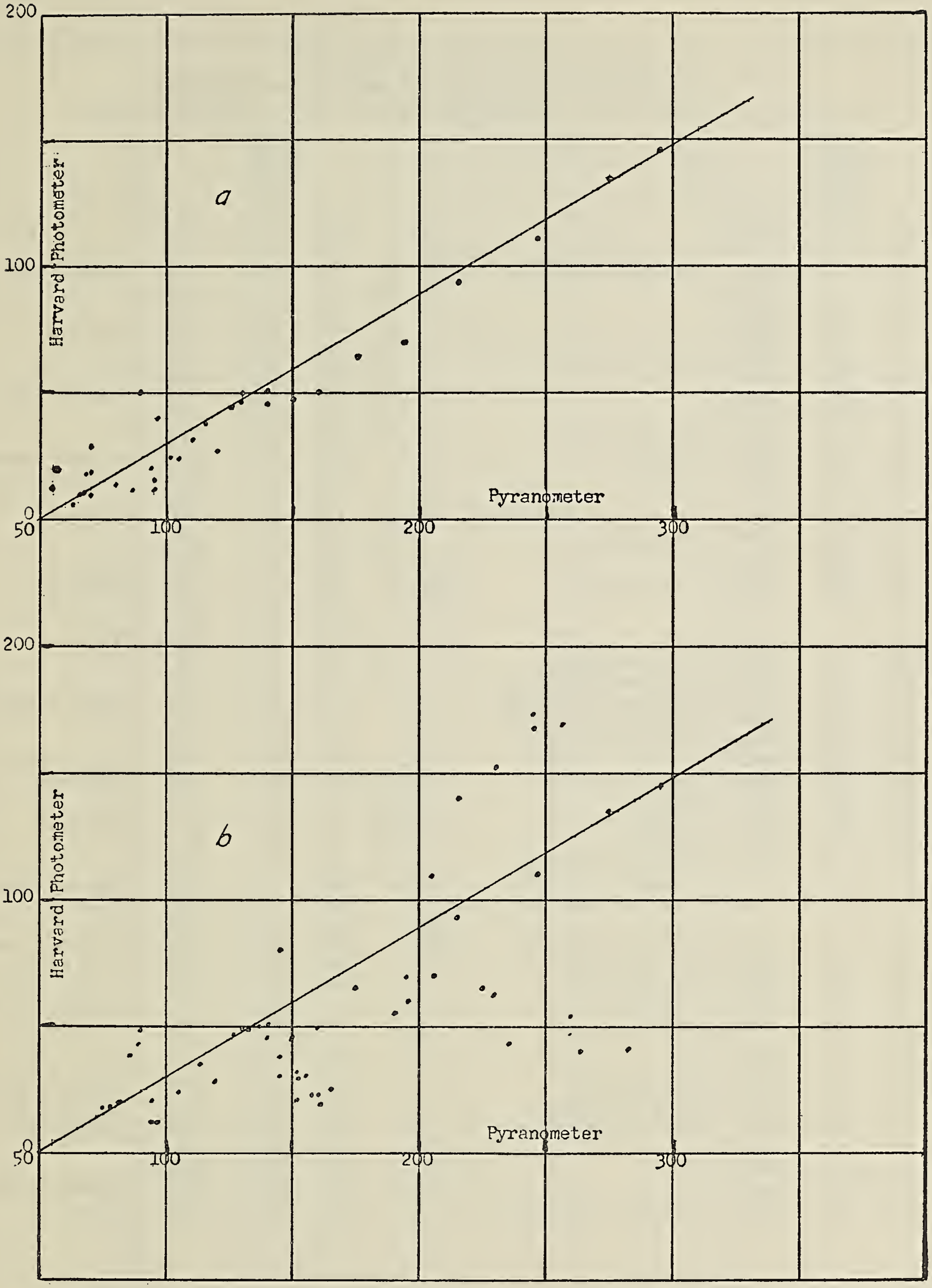


FIGURE 8.—Harvard photometer-pyranometer comparisons: *a*, 16 days in good skies; *b*, simultaneous with short-method observations.

Table 11.—*Simultaneous readings of Harvard photometer and pyranometer*

[Days with best skies indicated by (x). Readings beginning with March 31, 1951, were taken during short-method bolographs]

Date	Air Mass	Harvard photometer (millionths of brightness of sun)	Pyranometer (ly/min.)	Sky
1950				
Sept. 14	1.25	40.3	.01113	Variable, moderate haze.
	1.20	50.7	.01177	
	1.18	37.0	.01080	
	1.17	57.0	.01267	
16	1.44	48.2	.00908	Variable, moderate, haze.
	1.34	72.0	.01180	
	1.28	55.7	.01100	
	1.21	71.3	.01163	
28(x)	1.28	20.0	.00567	Very light haze.
(x)	1.25	13.2	.00548	Good sky.
Oct. 4(x)	1.50	19.0	.00700	Light haze.
(x)	1.39	28.2	.00692	
(x)	1.33	50.0	.00895	
19	1.49	47.8	.01035	Moderate haze.
	1.42	59.6	.01082	
Dec. 20	1.89	31.3	.01003	Moderate haze.
	1.88	24.1	.00986	
1951				
Jan. 5	1.99	14.7	.00851	Moderate haze.
9(x)	1.82	11.6	.00866	Light, white haze.
20	2.22	15.7	.00912	Light haze, scattering cirri.
23	1.79	16.9	.00728	Light haze, scattering cirri.
24(x)	2.00	9.7	.00665	Very light haze, good sky.
25	2.06	22.5	.00795	Light haze, increasing.
	2.35	29.8	.00857	
Feb. 1(x)	1.66	19.5	.00690	Light haze, blue sky.
3(x)	1.69	08.7	.00660	Blue sky.
6(x)	1.63	06.5	.00644	Blue sky.
9(x)	1.58	09.2	.00718	Blue sky.
13	1.70	17.5	.01217	Moderate haze, gusty wind.
15	1.51	35.2	.01572	Thick haze, bright near sun.
17	1.50	41.7	.02262	Thick, changeable haze.
	1.45	60.0	.02622	Scattered cumulus.
19	1.61	25.0	.01296	Moderate haze.
28	1.39	70.1	.03057	Very thick haze.
Mar. 7	1.40	32.9	.01349	Thick haze.
	1.34	43.6	.01472	
10	1.33	41.1	.01557	Thick, white haze.
12(x)	1.27	14.5	.00794	Very light haze.
25	1.35	42.3	.01742	Thick haze, clouds.
31	1.21	29.4	.0084	Light, changeable haze.
	1.19	42.9	.0090	
	1.18	37.8	.0086	
	1.17	48.6	.0089	
Apr. 1	2.50	37.0	.0145	Moderate, changeable haze.
	2.00	50.0	.0143	
Apr. 1	1.50	81.0	.0146	
8(x)	1.80	49.0	.0139	Moderate haze.
(x)	1.60	47.0	.0131	
(x)	1.50	44.0	.0126	
9(x)	2.00	27.0	.0119	Light haze.
(x)	1.80	24.0	.0105	
(x)	1.60	20.0	.0094	
13(x)	2.20	49.0	.0160	Moderate haze.
(x)	2.00	46.0	.0151	
(x)	1.80	45.0	.0141	
21	1.60	29.	.0154	Moderate, changeable haze.
	1.50	30.	.0153	
	1.40	31.	.0146	
22(x)	1.26	15.	.0096	Light haze.
(x)	1.22	13.	.0096	
(x)	1.20	13.	.0096	
May 17	1.60	71.	.0207	Thick haze.
	1.50	61.	.0196	
	1.40	57.	.0191	
20(x)	2.00	93.	.0214	Thick haze.
(x)	1.80	70	.0194	
(x)	1.50	64	.0177	
21	1.50	169	.0257	Thick, changeable haze.
	1.40	168	.0247	
	1.30	173	.0247	
22	1.37	111	.0248	Thick, changeable haze.
23(x)	1.60	145	.0296	Thick haze.
(x)	1.50	133	.0274	
25(x)	2.50	49	.0131	Light haze.
(x)	2.00	36	.0114	
(x)	1.50	40	.0097	
26	1.50	18	.0082	Light haze, streaks below sun.
	1.40	18	.0079	
	1.30	17	.0075	
June 2	2.50	152	.0229	Thick haze, streaks below sun, poor sky.
	2.20	140	.0216	
	2.00	110	.0204	
6	1.40	26	.0167	Moderate haze, streaks, poor sky.
	1.30	23	.0160	
	1.20	25	.0151	
10	1.40	41	.0282	(New springs to hold lenses in place.) Poor sky, very thick haze.
	1.30	42	.0263	
	1.20	42	.0237	
11	1.40	54	.0259	Very thick haze, poor sky.
	1.30	58	.0232	
	1.20	66	.0226	
13	1.50	19	.0162	Moderate, changeable haze.
	1.40	23	.0158	
	1.30	28	.0153	

TABLE 12.—*Apparent effect on short-method solar constants resulting from substitution of pyranometer values corrected to agree with Harvard photometer*

[Grade indicated by s (satisfactory) and u (unsatisfactory)]

Date	Air mass	Harvard photom. reading	Pyranometer reading		Solar constant		Apparent effect: + improved — made worse 0 unaffected
			ly/min.	Corrected to Harvard reading	Pyran. observed	Pyran. corrected	
Mar. 31	1.19	42.9	90	123	1.938	1.956	+
	1.18	37.8	86	115	38	53	+
	1.17	48.6	89	133	39 s—	60	+
Apr. 1	2.50	37	145	115	42		—
	2.00	50	143	135	44		—
	1.50	81	146	187	56 s—		—
8	1.80	49	139	135	23		0
	1.60	47	131	131	26		0
	1.50	44	126	126	24 s—		0
9	2.00	27	119	94	29	07	—
	1.80	24	105	91	33	20	—
	1.60	20	94	84	34 s	20	—
13	2.20	49	160	133	44		—
	2.00	46	151	128	47		—
	1.80	45	141	127	44 s		—
21	1.60	29	154	100	09		—
	1.50	30	153	101			—
	1.40	31	146	102	26 u		—
22	1.26	15	96	75	14	01	—
	1.22	13	96	74	12	97	—
	1.20	13	96	74	13 s—	98	—
May 17	1.60	71	207	170	62		+
	1.50	61	196	154	62		+
	1.40	57	191	145	56 s—		+
20	2.00	93	214	208	62		+
	1.80	70	194	170	61		+
	1.50	64	177	159	66 s—		+
21	1.50	16.9	257	338	65		—
	1.40	16.8	247	336	67		—
	1.30	17.3	247	345	78 u		—
22	1.37	11.1	248	239	59 u		0
23	1.60	14.5	296	296	66		0
	1.50	13.3	274	274	69 u		0
25	2.50	49	131	133	51		0
	2.00	36	114	111	50		0
	1.50	40	97	118	46 s		+
26	1.50	18	82	82	49		0
	1.40	18	79	79	41		0
	1.30	17	75	75	45 s—		0
June 2	2.50	15.2	229	309	23		+
	2.20	14.0	216	289	25		+
	2.00	11.0	204	237	24 s		+
6	1.40	26	167	94	869		—
	1.30	23	160	90	881		—
	1.20	25	151	93	886 u		—
10	1.40	41	282	120	52		—
	1.30	42	263	120	52		—
	1.20	42	237	121	52 u+		—
11	1.40	54	259	143	39		—
	1.30	58	232	150	30		—
	1.20	66	226	163	40 u+		—
13	1.50	19	162	82	58		+
	1.40	23	158	90	60		+
	1.30	28	153	99	60 s—		+

CHAPTER 6

Special Studies of Global Sun and Sky Radiation

The Smithsonian Institution was called upon by the Office of the Quartermaster General early in 1945 to advise on the planning and to supervise the conduct of the solar radiation measurements to be made at the Quartermaster Board, Camp Lee, Va., in connection with weathering studies on tents and tentage materials. Later measurements of solar radiation were made at Miami, Fla., and Montezuma, Chile. Since some of the data and techniques used for some of the measurements may be of interest to research workers in other fields, a summary of the results and a brief description of the apparatus are given.

All the instruments used were designed to measure the radiation on a flat surface, thus the receiver in each instrument could be exposed to a complete hemisphere. Three types of instruments were used—the Eppley pyrheliometer, a modification of the Rentschler ultraviolet meter, and a single-junction thermoelement with a thin, circular, nickel-foil receiver about 3 mm. in diameter.

The Eppley pyrheliometer is well known and is not described here. It may be read at intervals or automatically recorded.

The principle of the Rentschler ultraviolet meter is that a photoelectric cell, sensitive to ultraviolet only, is made to record by a series of impulses the energy it receives. As modified for this work, the Rentschler meter consists essentially of a special phototube whose cathode is made of Misch metal, sensitive in the wavelength range 2,900 to 4,500 Ångströms. This cathode has a flat absorbing surface protected by a quartz dome which exposes the cathode to a full hemisphere of sky. When ultraviolet radiation falls on the cathode a current proportional to the intensity of the radiation flows from the phototube, charging a condenser. When the voltage across the condenser reaches a certain value the condenser discharges. This discharge closes a relay which operates a counter. Immediately after discharge, the condenser again begins to charge and the operation is repeated. Thus, by reading the counter at stated intervals we have a series of values whose successive differences are numbers proportional to the ultraviolet energy falling upon the instrument. The total quantity of ultraviolet radiation integrated over a whole day is obtained by reading the counter at the beginning and end of the day and taking the difference. The result may be expressed in langleys by multiplying by an appropriate constant.

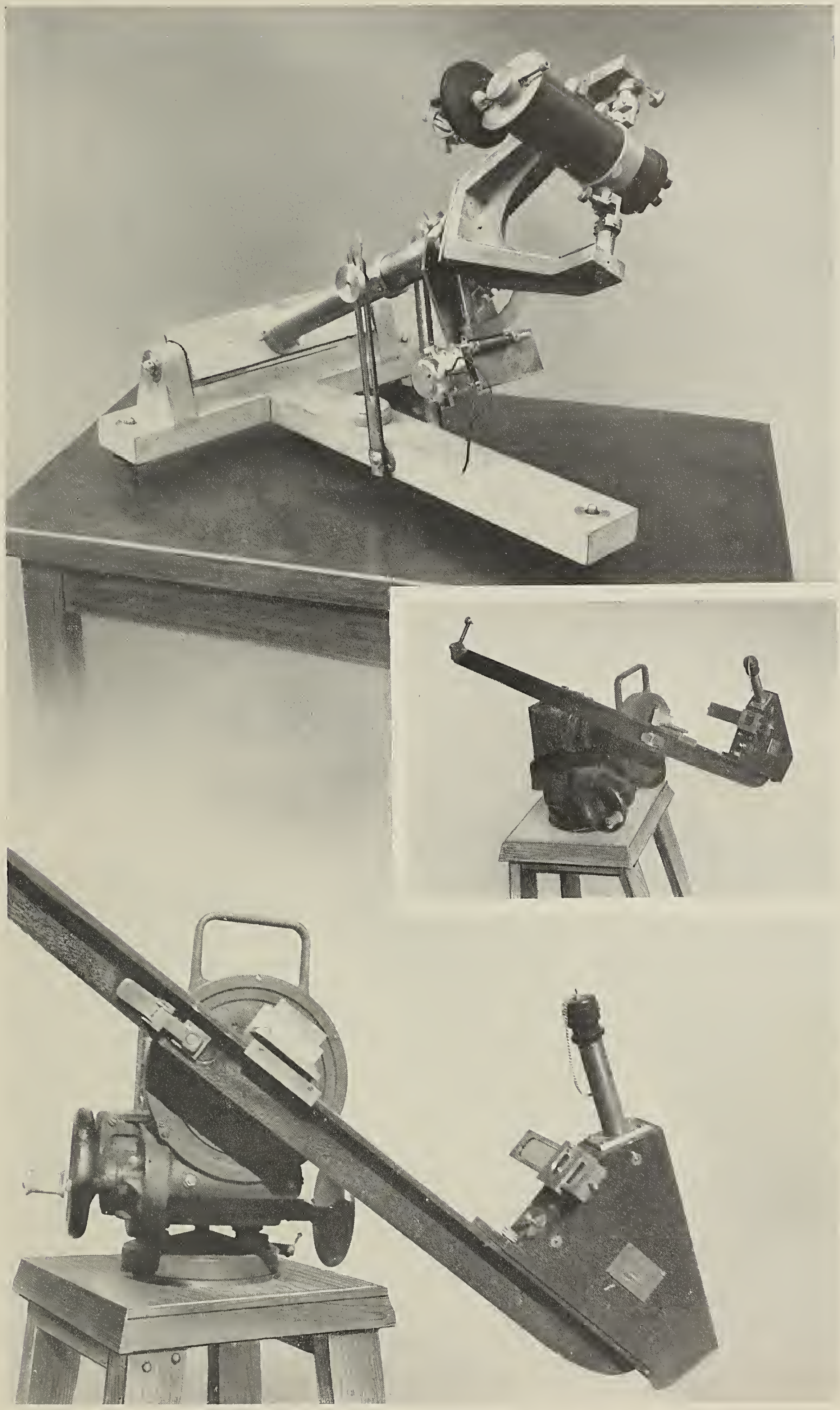
The Smithsonian thermoelectric instrument is a single-junction thermoelement welded to the center of the underside of a blackened, circular disk. The disk is made of very thin nickel foil. The thermocouple wires are welded to copper leads sealed in the end of a glass tube. The whole thermoelement assembly is mounted in a heavy piece of brass with the circular receiver just flush with the top surface of the brass. The heavy brass piece and thermoelement are housed in a brass tube with a double-walled, copper shutter operating on a hinge to open 180° and thus expose the absorbing disk to a full hemisphere. The exterior of the housing and shutter are painted white to minimize heating in sunlight.

Since these thermoelements are very sensitive to air currents, the element is covered by a glass hemisphere sealed to the heavy brass mounting. Three different glass hemispheres are used. One, of pure, fused quartz, transmits nearly completely all the radiation throughout the entire wavelength range of the solar spectrum. Another, a yellow glass (Corning No. 3385), transmits the visible and infrared but cuts off the ultraviolet. The third, a black glass (Corning No. 2540), transmits only the infrared.

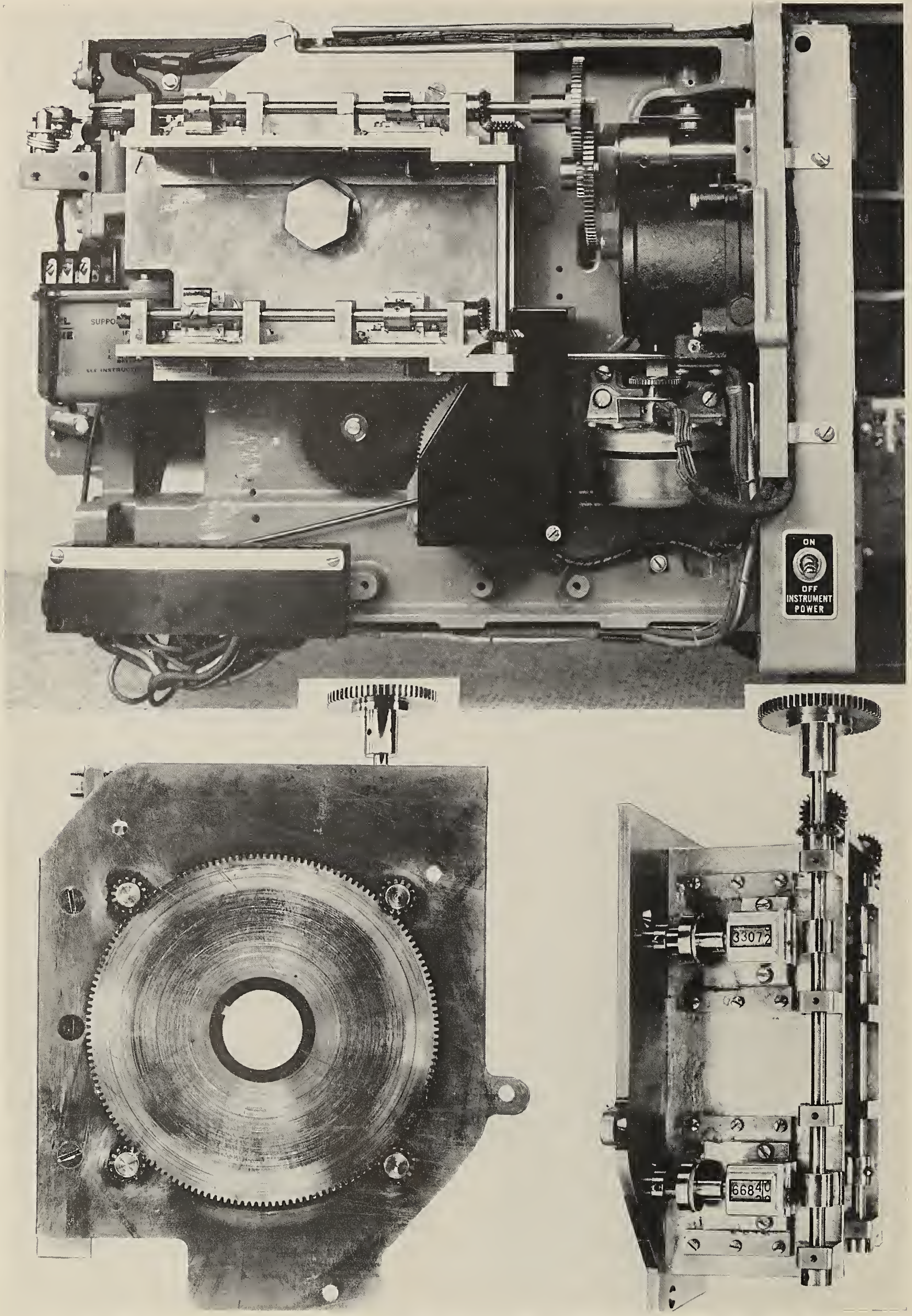
All instruments are mounted on a platform near one end of the building which houses the recording equipment. The building contains a large darkroom for the recording equipment for the Smithsonian instruments and a smaller one for developing the photographic paper.

One Eppley pyrheliometer is mounted horizontally on the observing platform and a continuous record is made by a recorder in the office below; the second Eppley is mounted at an angle of 45° facing south and is recorded on one of the photographic drums which were made for use with the Smithsonian instruments. The Rentschler photoelectric cell is mounted with the receiver at an angle of 45° facing east and the recording meter is located in the office below.

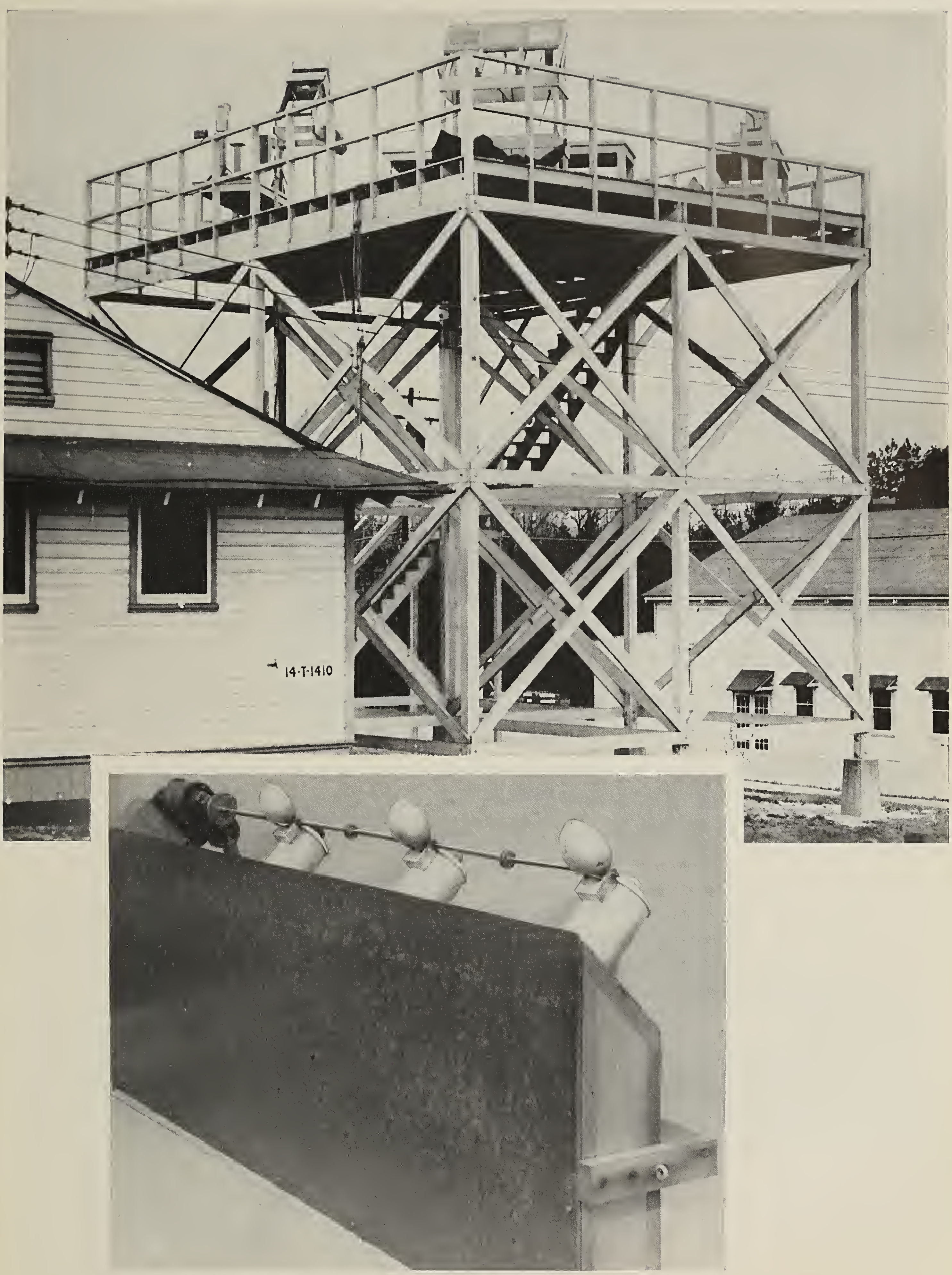
Seven Smithsonian instruments are installed on the platform. Three are mounted in a line at a 45° angle facing east, one having a quartz hemisphere, one a yellow hemisphere, and the third a black hemisphere. At one end is mounted an electromagnet, with a shaft connecting it with the three shutters. When current enters the magnet, the shutters open simultaneously. On breaking the circuit the shutters close by gravity. Three additional Smithsonian instruments are mounted at a 45° angle facing south, one inside each of the three types of filter boxes. These are placed so that the absorbing disk in each case is at the same level as the exposed panel would be in the filter box, and they are centrally placed to receive radiation symmetrically through the filter faces. Each of these instruments has a quartz hemisphere, since it is desired to measure all the radiation that comes through the filters. The shutters are opened and closed by an electromagnet as before described. The seventh instrument also has a quartz hemisphere and is mounted horizontally. This instrument serves as a check on the hori-



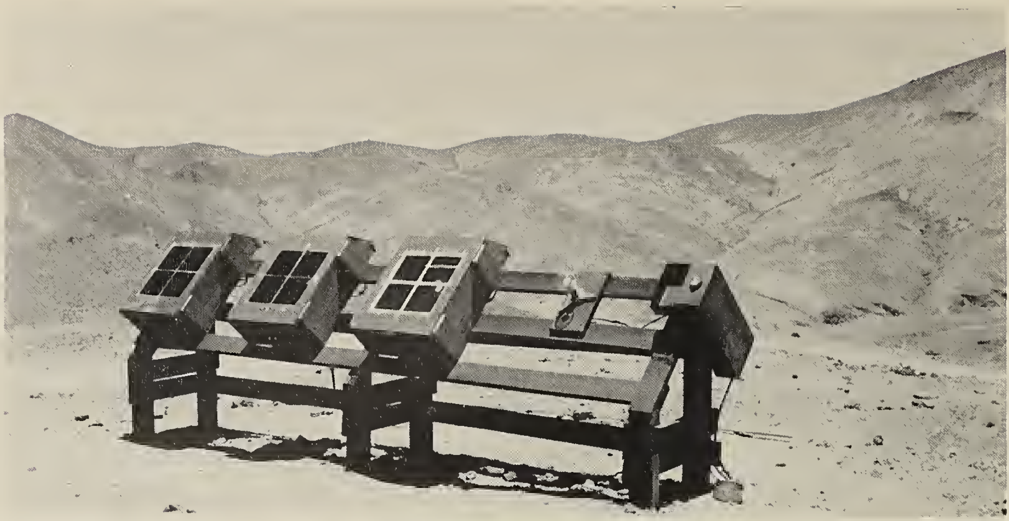
Top: Modified Ångström pyrheliometer in motor driven mounting. *Bottom:* Two views of the Harvard photometer.

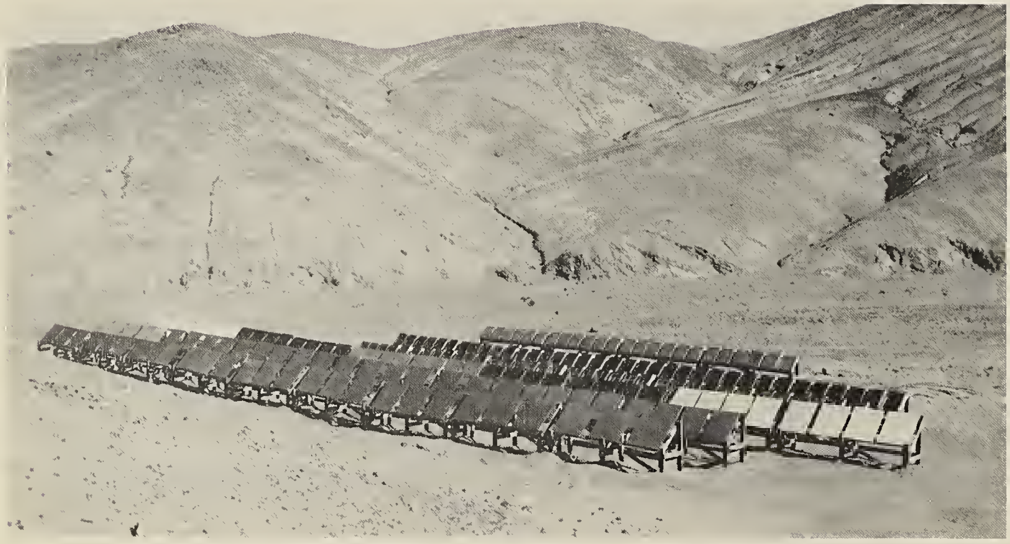


Top: Integrator, attached to 4-point Brown recording potentiometer. *Bottom:* Views of two parts of integrator.

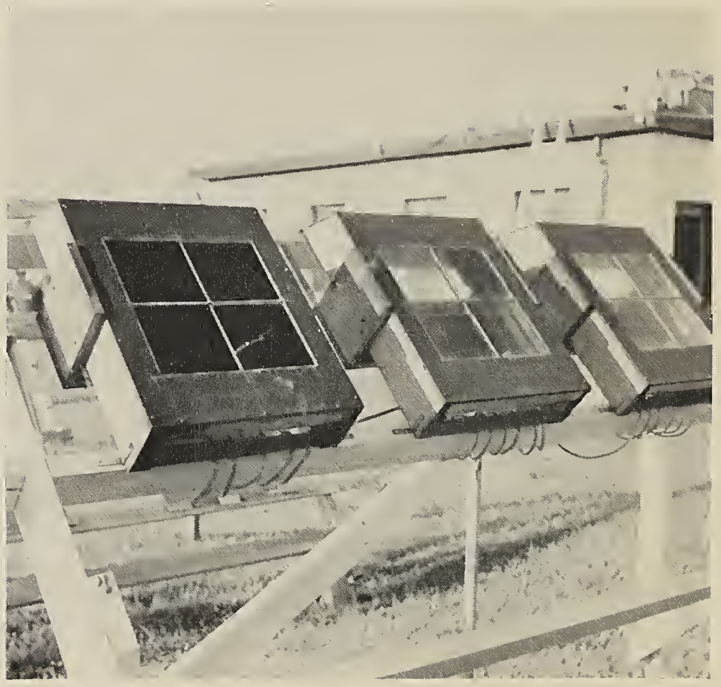


Top: Radiation instruments on platform at Camp Lee, Va. *Bottom:* Smithsonian thermoelements with shutters open, Camp Lee.





Montezuma, Chile. Exposure racks (left) and special radiation instruments (above).



Radiation instruments at Miami, Fla.

zontal Eppley. A third electromagnet operates the shutter of this instrument.

The galvanometer leads from all the instruments mounted on the platform and the leads for the electromagnets are all brought down in lead-covered cables to the recording room. On the center pier of this room are placed two rows of four recording drums. Each drum is accurately turned from brass tubing and is 13 cm. in diameter and 36 cm. long. Enclosing each drum is an easily removed, light-tight, wooden box along one side of which is an adjustable, horizontal slit which permits the spot of light from the galvanometer to reach the photographic paper which covers the drum. The width of the slit is about .1 mm. The eight drums are uniformly driven by a single synchronous motor. Through a speed reducer and gear arrangement the drums rotate once in 16 hours (about 2 mm. per 5 minutes). The motor also drives a contact wheel which operates relays to open the shutters and operates the galvanometer lights at the correct times.

On the two outer piers in the recording room are eight galvanometers, one each symmetrically facing the slit of one of the drums. The distance from galvanometer to drum is 2 m. in each case. The galvanometers used are double-suspension type with mirrors figured to give a sharp image of the source at the 2-meter scale distance. This type of galvanometer has a very stable zero and when correctly adjusted has a uniform scale for small angular deflections.

The source of each galvanometer spotlight is a 25-watt, tubular lamp having a single, vertical-spiral filament. A light-tight metal box encloses each lamp so that light from a small length of the filament is directed to the galvanometer mirror without leakage to the recording drum. Each lamp is mounted next to a drum on an adjustable stand to permit centering the light on the galvanometer mirror.

To minimize heating of the hemispherical domes when the shutters are opened, and thus to avoid zero drift, we arranged to open the shutters for 5 seconds in each 5 minutes. In order to make sure that readings spaced 5 minutes apart gave a correct picture of the variations in radiation during a day, we made planimeter readings on the automatic recordings of the Eppley on various types of days, thus summing up the total area for each day. Then we summed up a second time on the same days using the readings at 5-minute intervals only. The two results showed excellent agreement, even on the most irregular traces.

In order to reduce the fog on the paper produced by the galvanometer lights, the lights are arranged to flash on dimly 5 seconds before the shutter opens, to shine brightly at the instant it opens, and then cut off completely as the shutter closes. As a result the record is a series of dots for the zeros and a corresponding series of dots for the readings. Another device makes a series of lines the full width of the photographic paper. These lines are spaced 20 minutes apart and serve as a guide when reading the points. Figure 9 is a copy of one of the records made at Miami. In this case the readings are 2½ minutes apart.

In order to correct for changes in the sensitivity of the apparatus, a resistance of 1/10 or 2/10 of an ohm is inserted in each galvanometer circuit. At intervals of about 1 hour a current, kept constant through potentiometer control, is passed through these resistances. This gives a definite deflection of each galvanometer whose magnitude is a measure of sensitiveness of each setup. These test points are shown in figure 9 as a series of dots across about the middle of the record.

All instruments except the photocell were calibrated by comparison with a Smithsonian pyranometer after being installed.

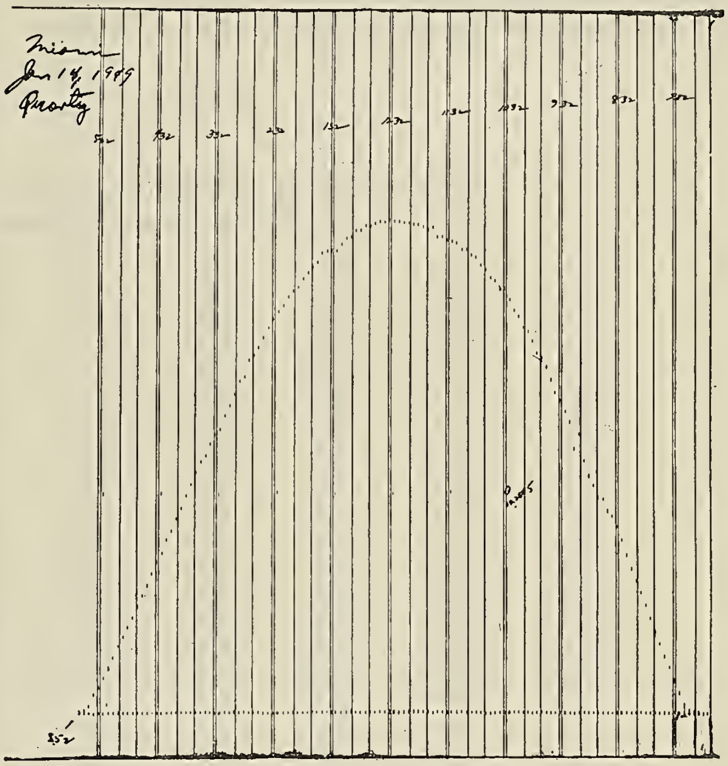


FIGURE 9.—Sample record on a clear day, Miami, Fla.

The three filters used in exposure tests were vycor, a yellow glass (Corning No. 3385), and a black glass (Corning No. 2540). These were molded filters and, since the largest filter we could get was 6½ inches square, it was necessary to use four of these filters cemented to a suitable frame to obtain an exposure area of 1 square foot.

Plate 7 shows the apparatus mounted on the platform at Camp Lee, Va.

Tables 13–16 give a summary of the radiation measurements made at Camp Lee, Miami, and Montezuma. The tables for the ultraviolet, visible, and infrared radiation on a surface 45° east at Camp Lee and on a surface 45° south at Miami are derived from the three Smithsonian instruments with quartz, yellow, and black glass hemispherical domes.

Table 15 gives the results of the measurements made with the spectrobolometer. The spectrobolometer and other instruments used for these measurements are described in volumes 4 and 5 of the Annals of the Astrophysical Observatory. In table 15, column 1 is the date, and column 2 the time at the middle of the observation. Column 3 is the air mass at the time given in column 2 and is determined from the altitude of the sun as measured with a theodolite. Column 4 is the precipitable water expressed in centimeters of liquid water. Column 5 is the radiation in langleys per minute from the sky in a cone about 30° around the sun. In order to compare the sky radiation from day to day, the values as determined are all expressed in terms of the sky radiation at air mass 2.0. Columns 6–9 give the ultraviolet, visible, infrared, and total radiation of the direct solar beam on a surface normal to the solar beam. The values of the radiation in the three parts of the spectrum are determined by measuring the bolographs at 34 wavelengths. The ultraviolet part of the spectrum for this work is all wavelengths shorter than .45μ, the visible spectrum .45μ to .88μ, and the infrared all wavelengths longer than .88μ. The total radiation was measured with a modified Ångström pyrheliometer.

The equipment for the solar radiation measurements at Miami was set up on the test field used jointly by General Motors Corp. and the South Florida Test Service.

The total radiation on a surface 45° facing south, table 14c, was kindly furnished by the South Florida Test Service.

The radiation measurements given in this chapter are published with the approval of the Research Director, Research and Development Division, Office of the Quartermaster General.

Table 13a.—*Total radiation in langleys on a horizontal surface, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	115	328	287	382	524	734	582	452	494	488	160	233
2	154	369	94	259	480	500	504	334	524	503	103	249
3	92	332	476	220	334	594	542	360	460	452	65	118
4	114	174	432	382	340	490	651	501	552	467	248	122
5	114	182	413	452	633	702	430	616	426	426	306	124
6	169	242	262	306	644	670	486	538	280	420	298	96
7	56	386	352	593	440	584	333	325	277	308	155	112
8	144	326	100	340	629	659	422	466	349	138	242	222
9	174	246	500	427	731	652	376	586	482	94	328	190
10	274	220	494	464	712	732	452	524	438	58	270	104
11	192	387	462	433	590	674	467	500	322	150	120	143
12	197	311	509	375	582	616	538	320	383	280	302	170
13	136	247	250	469	706	587	644	418	337	374	298	146
14	178	221	310	330	366	274	484	598	513	442	260	130
15	71	346	405	398	302	406	504	619	521	252	150	110
16	141	321	222	304	414	509	570	492	471	309	234	242
17	152	390	266	322	526	476	708	424	509	268	152	205
18	168	385	333	670	476	572	665	314	360	287	112	54
19	130	58	103	649	670	480	464	527	329	352	184	136
20	62	158	388	610	590	136	634	526	208	238	162	144
21	235	384	384	388	488	577	374	312	388	250	223	160
22	186	381	477	397	522	646	510	340	300	344	77	187
23	247	211	389	536	666	686	533	430	337	392	124	230
24	182	218	240	516	657	626	616	518	71	272	154	172
25	275	436	394	255	534	660	638	384	387	337	160	144
26	172	390	400	395	410	496	565	476	492	234	120	232
27	262	344	345	636	630	619	589	393	498	234	154	180
28	299	166	512	716	477	320	502	341	391	180	256	104
29	294		380	456	624	336	657	413	348	287	262	103
30	119		314	362	563	534	656	348	360	282	142	140
31	137		504		719		378	554		265		61
Total	5241	8159	10997	13042	16979	16547	16474	13949	11807	9383	5821	4763
Avg. per day	169	291	355	435	548	552	531	450	394	303	194	154
											Total langleys for year	133162
											Average per day for year	365

TABLE 13b.—*Ultraviolet radiation in langleys on a surface 45° East, using Misch metal photoelectric cell, Camp Lee, Virginia, 1947*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	1	18	11	39	49	57	58	40	34	39	13
2	7	27	5	16	51	48	56	23	39	37	12
3	5	27	29	6	43	47	57	16	38	30	6
4	8	10	25	26	45	46	53	51	40	36	21
5	5	20	31	26	50	58	47	56	30	31	23
6	19	27	10	31	46	46	45	47	26	32	21
7	5	27	32	46	32	36	31	26	23	19	15
8	18	15	16	43	54	39	22	28	27	17	14
9	23	28	33	23	53	45	39	52	36	15	25
10	23	27	35	38	51	56	27	30	32	7	15
11	24	27	32	32	46	50	40	35	31	8	3
12	14	19	31	38	51	55	58	35	42	22	24
13	4	22	8	31	53	41	45	40	32	27	23
14	7	23	19	8	48	26	32	38	38	33	19
15	9	20	29	16	19	42	35	45	38	8	3
16	11	22	24	13	42	38	40	41	35	18	19
17	10	27	29	12	49	39	57	33	39	16	20
18	10	29	34	45	47	47	48	23	26	23	12
19	6	5	14	43	54	32	24	41	32	28	11
20	7	2	14	44	54	11	55	37	27	30	19
21	23	32	25	10	44	44	11	27	32	28	15
22	21	29	26	13	30	56	50	24	17	24	3
23	16	13	38	38	47	44	57	38	29	29	5
24	20	32	21	42	53	39	48	36	6	16	5
25	21	32	38	34	38	52	47	41	25	27	20
26	8	30	33	45	47	26	46	45	34	28	10
27	22	30	21	50	53	47	39	18	40	25	16
28	23	18	41	51	45	23	30	18	32	15	19
29	21		43	42	57	39	50	38	36	23	21
30	18		39	42	36	38	50	39	27	21	5
31	22		40		54		47	42		15	
Total	431	638	826	943	1441	1267	1344	1103	943	727	437
Avg. per day	13.9	22.8	26.6	31.4	46.5	42.2	43.4	35.6	31.4	23.5	14.6

TABLE 13c.—*Total radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	76	199	204	453	424	595	420	368	397	412	120	185
2	104	260	76	176	382	378	395	244	437	423	94	184
3	68	256	344	152	286	469	402	286	390	369	64	128
4	72	144	310	285	274	333	541	395	458	370	202	98
5	98	142	316	334	432	600	342	494	422	334	244	102
6	121	160	205	242	513	576	350	525	239	276	256	68
7	37	285	262	472	311	413	284	280	172	248	150	84
8	116	204	100	266	556	530	332	382	258	123	170	138
9	128	194	370	261	583	478	271	452	406	74	262	141
10	212	162	384	350	571	564	342	424	412	51	217	100
11	152	284	326	386	463	582	314	444	282	109	100	116
12	105	199	364	262	418	538	388	243	340	231	280	136
13	92	174	217	416	578	536	524	390	325	282	258	98
14	127	152	238	244	316	206	408	501	436	354	205	94
15	53	266	365	283	253	246	398	503	442	190	114	68
16	112	266	142	194	278	446	424	432	358	210	174	177

TABLE 13c.—*Total radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
17	89	282	232	182	409	396	546	390	452	200	160	172
18	100	291	266	518	376	554	542	270	315	232	110	52
19	82	50	87	495	562	382	389	386	240	302	138	104
20	32	137	241	502	509	116	548	458	224	200	118	103
21	194	342	349	302	396	488	317	252	298	224	191	128
22	157	290	362	311	374	465	416	218	283	286	60	118
23	170	180	383	406	466	591	401	307	254	324	100	217
24	166	213	160	434	544	595	488	426	80	214	116	150
25	210	348	330	202	420	589	557	313	249	279	174	133
26	122	338	323	250	320	434	500	392	396	198	107	197
27	182	320	285	518	441	464	507	322	410	219	152	168
28	252	134	392	568	349	276	408	302	324	175	210	85
29	232		310	274	456	299	552	332	314	212	244	88
30	92		294	308	414	354	562	255	208	226	108	118
31	112		458		574		346	487		242		46
Total	3865	6272	8695	10046	13248	13493	13214	11473	9821	7589	4898	3796
Avg. per day	125	224	280	335	427	450	426	370	327	245	163	122

Total langleys for year 106410
Average per day for year 292

TABLE 13d.—*Ultraviolet radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15	42	38	78	82	108	94	80	76	80	28	38
2	20	50	18	40	76	78	85	60	92	80	22	38
3	14	50	65	33	57	94	82	59	74	68	16	25
4	18	29	58	62	60	66	106	99	88	72	49	19
5	19	26	58	68	88	104	68	112	75	65	52	18
6	27	40	40	54	96	100	77	100	52	64	53	16
7	8	56	52	90	69	88	66	61	46	49	33	19
8	22	40	24	48	94	98	74	72	58	24	38	29
9	29	38	72	56	107	98	63	106	72	18	59	30
10	42	30	72	70	107	112	80	82	80	12	47	20
11	30	52	64	72	87	110	78	82	58	26	22	24
12	26	41	70	56	84	108	88	48	71	44	60	35
13	19	36	41	72	123	100	101	70	72	56	50	21
14	26	29	48	44	64	50	80	92	84	72	42	22
15	14	50	68	56	54	61	86	94	88	38	24	18
16	25	51	36	43	66	87	92	82	72	46	41	39
17	24	56	42	44	84	83	104	76	90	40	36	38
18	24	58	50	89	79	101	106	54	67	50	24	12
19	24	10	20	84	103	72	78	75	55	62	38	24
20	7	25	49	88	93	28	114	86	49	44	30	22
21	40	64	70	54	88	96	67	53	65	46	40	28
22	32	54	68	56	77	102	104	54	56	58	14	32
23	34	33	68	80	96	113	93	67	60	74	21	58
24	32	39	38	76	102	104	104	82	19	42	21	30
25	44	66	62	46	86	120	114	64	57	60	41	24
26	26	62	63	56	68	81	111	76	74	46	24	37
27	42	60	50	93	94	96	110	60	79	49	34	44
28	48	31	78	103	72	62	90	55	67	38	48	21
29	44		64	67	94	68	109	69	72	53	54	25
30	24		60	66	82	81	112	62	49	46	24	22
31	24		82		102		80	88		46		12
Total	823	1218	1688	1944	2634	2669	2816	2320	2017	1568	1085	840
Avg. per day	27	44	54	65	85	89	91	75	67	51	36	27

Total langleys for year 21622
Average per day for year 59

Table 13e.—*Visible radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	36	98	104	240	244	324	226	196	218	214	64	96
2	56	128	40	98	218	207	215	132	234	220	55	91
3	38	126	174	84	158	158	217	162	216	192	37	66
4	37	74	162	152	150	150	296	208	245	193	104	46
5	51	68	153	178	232	280	188	260	235	182	128	54
6	61	106	110	132	274	320	190	290	135	144	132	36
7	23	142	133	249	166	225	159	160	94	137	80	46
8	60	100	56	134	298	298	185	215	143	74	90	71
9	62	94	186	138	300	262	148	236	234	42	130	73
10	108	77	192	180	292	302	189	236	222	30	124	54
11	77	142	162	210	262	321	171	250	159	60	55	61
12	52	100	182	139	228	293	210	142	187	132	144	66
13	50	88	117	224	290	300	286	220	176	150	136	55
14	66	76	128	138	138	115	226	274	240	184	104	50
15	30	130	194	156	156	130	216	276	236	102	58	36
16	61	136	66	106	148	246	232	244	194	111	86	88
17	48	138	119	95	226	213	304	220	235	108	86	88
18	54	143	128	271	207	295	295	152	169	128	61	28
19	42	29	48	264	310	218	216	218	132	154	68	62
20	18	72	126	270	289	68	292	257	128	99	62	50
21	97	179	171	166	215	268	172	146	160	114	100	70
22	74	146	186	172	206	242	218	118	152	146	31	96
23	85	94	198	220	246	317	208	166	134	164	52	100
24	86	104	84	236	296	326	260	233	47	116	60	82
25	106	172	174	110	232	311	295	170	122	147	84	70
26	64	172	168	128	176	242	263	214	208	102	58	106
27	92	162	152	271	238	255	266	182	214	118	75	80
28	128	78	198	294	191	154	210	172	170	98	101	46
29	115		157	142	250	162	290	186	162	110	126	46
30	50		150	166	220	198	292	136	108	118	55	65
31	58		236		307		185	265		127		26
Total	1985	3174	4454	5363	7163	7200	7120	6336	5309	4016	2546	2004
Avg. per day	64	113	144	179	231	240	230	204	177	130	85	65

Total langleys for year 56670
Average per day for year 155

Table 13f.—*Infrared radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	26	58	62	136	98	164	99	91	104	120	27	50
2	24	82	18	38	88	83	94	52	110	123	18	56
3	16	80	105	34	71	118	104	64	101	108	12	36
4	18	40	90	70	64	89	140	88	126	106	48	27
5	28	48	106	88	112	168	86	122	112	88	66	30
6	33	64	55	58	144	157	82	135	52	67	70	14
7	6	88	76	133	76	100	60	59	32	62	37	18
8	33	64	20	82	164	132	72	95	58	26	43	38
9	38	62	112	67	176	118	60	110	100	14	74	38
10	63	54	120	100	172	150	74	106	110	8	46	27
11	44	91	100	104	115	150	66	113	66	24	23	32
12	27	58	112	67	106	136	90	53	82	56	77	36
13	23	50	58	120	166	136	136	100	78	76	72	22
14	34	48	62	62	79	42	98	136	111	98	59	22
15	10	86	102	72	56	54	96	134	117	50	32	14
16	26	78	38	46	63	113	100	106	92	54	46	50
17	18	88	72	43	99	101	138	94	126	52	39	46

Table 13f.—*Infrared radiation in langleys on a surface 45° East, Camp Lee, Virginia (2-year means, December 1945–November 1947)*—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
18	22	91	83	158	90	132	140	64	79	55	25	12
19	18	10	20	146	150	92	96	93	53	85	32	18
20	7	40	67	144	128	20	142	116	51	57	26	32
21	57	104	108	82	94	125	78	52	73	61	51	31
22	50	91	108	84	92	121	94	46	75	81	15	40
23	51	52	116	101	124	161	101	74	58	86	28	58
24	49	70	38	122	147	164	123	111	14	56	30	38
25	60	112	94	46	103	158	148	78	70	72	48	38
26	30	105	92	65	76	110	126	52	113	49	24	54
27	50	98	78	154	109	112	132	80	118	52	42	48
28	76	26	116	171	86	60	107	76	87	39	60	19
29	72		89	62	112	68	152	77	80	50	64	18
30	20		84	76	112	76	158	59	52	61	28	32
31	30		139		164		81	134		70		8
Total	1059	1938	2540	2731	3436	3410	3273	2770	2500	2006	1262	1002
Avg. per day	34	69	82	91	111	114	103	89	83	65	42	32

Total langleys for year 27927
Average per day for year 76

Table 13g.—*Radiation in langleys on a surface 45° South, through vycor glass, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	130	337	248	366	338	413	323	210	395	457	122	454
2	176	401	45	168	306	300	280	184	398	504	68	406
3	66	366	436	88	213	338	282	218	327	456	50	254
4	91	148	384	262	202	280	378	314	438	458	291	272
5	94	156	361	330	396	410	244	398	312	400	368	220
6	180	216	227	200	393	386	260	334	190	316	379	277
7	27	440	280	430	270	330	188	187	172	289	112	160
8	152	340	54	251	390	358	256	284	250	80	298	140
9	204	260	452	316	453	388	219	388	402	52	446	297
10	358	231	454	464	464	409	196	330	351	30	328	219
11	236	430	378	388	388	336	227	313	256	117	132	40
12	212	302	458	270	342	350	304	212	303	244	410	148
13	118	222	197	312	438	316	376	277	244	374	402	375
14	207	209	239	226	214	148	266	410	422	472	334	234
15	40	350	344	266	165	249	323	434	448	242	196	250
16	110	312	157	212	268	279	334	338	404	288	310	282
17	166	424	211	204	300	262	428	283	432	242	194	159
18	181	410	290	462	260	321	384	196	292	251	80	37
19	109	28	56	454	392	274	264	378	254	371	212	201
20	36	134	308	436	338	338	388	411	151	255	171	37
21	282	415	352	254	222	315	220	187	306	258	302	152
22	241	400	383	255	330	360	302	196	243	392	83	380
23	296	160	295	375	390	382	306	278	244	428	142	386
24	200	226	164	344	375	344	376	374	51	265	202	382
25	328	476	280	148	296	368	400	278	362	354	208	459
26	164	378	282	258	234	274	354	347	471	236	99	402
27	388	352	256	414	364	358	364	274	473	206	153	135
28	364	104	408	486	283	183	330	243	321	144	396	278
29	372		288	296	356	230	434	304	280	334	414	201
30	112		238	204	315	298	465	234	336	314	202	374
31	156		462		420		224	436		308		33
Total	5796	8227	8987	9139	10115	9597	9695	9250	9528	9137	7104	7644
Avg. per day	187	294	290	305	326	320	313	298	318	295	237	247

Total langleys for year 104219
Average per day for year 286

TABLE 13h.—*Radiation in langleys on a surface 45° South, through yellow glass, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	93	229	172	240	218	266	206	137	260	306	80	244
2	130	270	30	112	188	188	167	115	258	328	43	274
3	42	249	288	60	135	218	174	138	213	296	32	164
4	59	99	256	174	126	178	242	200	286	304	192	192
5	64	100	240	219	266	266	152	246	203	274	240	150
6	122	140	162	136	256	247	164	215	119	208	244	188
7	18	294	181	286	182	217	119	117	109	187	78	108
8	102	234	38	164	256	229	170	188	154	47	185	93
9	122	170	306	210	296	256	138	252	261	30	294	199
10	250	154	307	208	288	266	121	218	218	16	216	152
11	160	286	260	192	249	216	143	200	162	74	85	26
12	147	207	312	174	219	222	188	134	187	154	270	96
13	98	148	129	208	282	207	240	176	150	244	270	252
14	150	140	154	152	144	94	174	262	269	309	226	163
15	26	241	225	178	104	156	213	282	276	158	132	173
16	73	211	102	142	167	178	206	212	254	186	208	200
17	114	288	141	138	197	166	278	176	295	156	128	105
18	124	272	190	308	164	208	250	122	192	162	49	24
19	73	18	36	302	204	177	176	236	166	241	151	120
20	20	92	208	284	218	47	252	265	93	162	112	24
21	186	272	242	171	134	202	144	118	187	167	191	96
22	158	269	264	175	221	228	194	126	164	258	56	266
23	208	108	192	242	254	242	192	174	156	285	99	266
24	128	150	112	227	239	225	246	238	30	176	138	260
25	220	179	190	95	189	233	258	170	239	237	132	318
26	206	240	184	172	148	177	232	224	299	158	62	272
27	242	232	171	274	235	228	235	179	306	134	104	86
28	244	67	242	324	178	120	217	156	206	92	268	181
29	249		186	196	230	146	288	194	184	220	277	120
30	74		155	132	212	194	306	145	218	204	142	256
31	102		310		272		142	283		202		20
Total	4004	5359	5985	5895	6471	5997	6227	5898	6114	5975	4704	5088
Avg. per day	129	191	193	196	209	200	201	190	204	193	157	164

Total langleys for year 67717
Average per day for year 186

TABLE 13i.—*Radiation in langleys on a surface 45° South, through black glass, Camp Lee, Virginia (2-year means, December 1945–November 1947)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	30	76	54	72	57	75	54	36	74	82	23	78
2	44	92	7	30	52	50	44	29	70	100	10	93
3	12	83	94	16	30	60	48	35	60	91	6	51
4	18	35	80	50	33	50	66	54	84	91	56	62
5	19	34	78	64	72	74	44	70	57	82	76	48
6	38	44	44	34	73	66	42	59	30	58	76	60
7	3	96	58	86	48	60	28	28	28	52	22	34
8	30	78	12	51	75	63	44	49	41	10	55	28
9	43	56	100	63	90	73	35	72	68	6	91	66
10	80	52	99	61	90	75	29	60	60	2	67	47
11	49	96	84	56	71	60	34	56	38	19	24	5
12	46	69	98	48	62	60	51	35	50	41	86	27
13	26	48	38	64	84	54	69	47	38	70	86	77
14	46	45	50	47	34	21	46	73	76	90	71	52
15	5	84	66	52	26	42	58	78	82	48	43	56
16	22	68	28	40	46	49	56	54	75	54	59	65
17	36	94	41	41	54	47	78	46	83	46	40	31
18	38	92	57	94	44	56	68	33	53	44	12	5

TABLE 13i.—*Radiation in langleys on a surface 45° South, through black glass, Camp Lee, Virginia (2-year means, December 1945–November 1947)*—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	22	4	14	88	70	48	46	65	44	72	44	35
20	6	34	66	86	57	9	72	72	24	48	33	5
21	58	88	74	52	36	56	38	30	52	50	54	31
22	52	88	81	52	62	64	58	36	42	82	14	91
23	69	34	56	75	78	70	54	48	40	86	30	86
24	40	48	29	64	64	62	70	71	6	52	41	85
25	70	107	52	26	50	63	74	45	67	69	40	104
26	32	80	53	52	38	48	64	64	88	43	16	83
27	78	74	50	92	66	64	63	52	91	34	30	26
28	80	17	82	102	48	30	58	42	58	22	84	55
29	84		55	56	62	36	82	54	49	59	84	35
30	18		46	36	56	52	86	39	62	64	46	84
31	29		98		79		38	84		58		5
Total	1223	1816	1844	1750	1807	1637	1697	1616	1690	1725	1419	1610
Avg. per day	39	65	59	58	58	55	55	52	56	56	47	52

Total langleys for year 19834
Average per day for year 54

TABLE 14a.—*Total radiation in langleys on a horizontal surface, Miami, Florida (January 1948–July 1949)*

[January through July, 2-year means; August through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	406	460	538	554	596	465	682	265	421	548	479	404
2	340	427	544	485	695	558	664	474	518	512	458	383
3	368	216	435	306	652	631	474	665	617	589	388	268
4	344	422	556	366	418	510	354	714	529	...	494	370
5	326	426	389	418	527	688	393	712	645	...	349	386
6	356	484	496	347	694	620	586	670	642	369	444	316
7	391	407	490	660	596	435	474	606	516	414	434	378
8	331	477	456	657	499	464	578	685	596	532	406	378
9	320	462	580	648	452	600	569	640	345	440	269	318
10	380	282	496	560	482	467	600	421	404	388	355	328
11	200	404	560	557	612	398	418	387	494	581	386	83
12	356	454	573	609	318	282	560	646	404	434	337	396
13	310	451	485	574	566	353	638	592	561	310	434	338
14	406	464	532	482	677	422	588	476	345	413	535	326
15	328	296	436	412	566	388	717	485	99	248	423	356
16	274	432	599	556	619	387	544	574	497	279	384	396
17	314	461	572	562	541	326	534	481	321	225	450	392
18	294	406	514	506	522	554	542	452	504	528	304	368
19	392	411	468	446	444	594	304	334	544	511	418	300
20	274	438	328	578	666	566	584	365	279	72	427	337
21	183	406	436	460	690	624	725	446	...	502	402	341
22	368	486	586	578	634	512	670	303	...	340	466	353
23	230	464	607	574	696	599	320	590	...	470	443	391
24	280	236	454	490	678	506	329	673	576	276	275	218
25	351	422	602	514	672	580	316	319	375	472	420	282
26	338	504	588	458	696	664	514	303	87	426	359	95
27	437	390	600	478	656	709	654	237	411	86	373	320
28	313	538	544	604	688	691	546	372	572	251	348	305
29	454	561	554	706	568	706	629	731	383	290	286	375
30	404		606	596	456	632	549	784	521	505	402	219
31	398		528		612		538	477		355		429
Total	10466	12287	16152	15741	18188	15931	16593	15879	12206	11366	11948	10149
Avg. per day	338	424	521	525	587	531	535	512	452	392	398	327

Total langleys for year 166906
Average per day for year 457

TABLE 14b.—*Ultraviolet radiation in langleys on a surface 45° South, Miami, Florida (January 1948–May 1949)*

[January through May, 2-year means; June through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	49	56	60	69	64	47	69	33	48	68	58	53
2	42	48	64	59	75	48	66	56	58	63	60	53
3	48	26	48	40	72	61	43	69	68	70	51	38
4	44	50	68	43	48	57	21	73	66	15	64	52
5	50	52	48	51	60	64	36	72	74	0	53	52
6	43	60	54	42	74	61	60	68	73	43	58	41
7	46	50	60	72	66	35	39	62	57	52	59	51
8	40	58	52	72	54	69	58	70	68	66	53	48
9	41	58	64	72	50	72	66	68	44	58	46	41
10	47	36	59	62	54	66	70	48	52	51	47	44
11	21	49	62	64	68	70	54	47	58	70	51	12
12	44	53	65	68	37	33	66	70	50	54	45	55
13	36	53	56	65	60	41	69	64	67	42	57	54
14	48	52	61	56	73	40	54	57	44	54	58	45
15	36	37	51	50	62	62	70	57	16	32	56	48
16	32	52	68	55	70	47	66	65	60	35	49	55
17	38	59	67	62	60	37	62	56	41	54	59	58
18	44	58	58	61	56	75	69	53	59	65	42	51
19	48	53	56	54	52	56	39	40	64	63	58	49
20	26	53	40	67	70	60	70	44	44	12	57	47
21	23	48	52	56	71	75	76	53	..	63	52	46
22	48	54	71	67	66	72	66	38	..	43	56	47
23	28	50	72	67	71	68	39	65	..	58	59	55
24	29	32	56	59	69	69	39	72	71	35	39	34
25	45	48	70	58	68	72	37	38	49	60	58	40
26	48	56	68	53	70	73	64	39	16	54	49	14
27	56	46	71	64	66	71	65	32	53	12	50	42
28	40	57	66	66	68	67	42	43	69	31	38	40
29	58	65	65	77	59	71	67	71	49	39	52	49
30	58		71	64	52	75	60	74	66	62		30
31	52		68		66		58	56		46		52
Total	1308	1469	1891	1815	1951	1814	1760	1753	1484	1470	1584	1396
Avg. per day	42	51	61	60	63	60	57	57	55	50	53	45

TABLE 14c.—*Total radiation in langleys on a surface 45° South, Miami, Florida (1948)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	584	620	586	526	449	292	425	292	435	562	538	630
2	478	575	608	432	518	366	426	388	462	395	364	602
3	535	211	444	258	486	416	303	432	534	388	400	444
4	476	516	611	326	292	316	206	502	417	503	624	466
5	613	548	396	376	388	452	226	504	527	94	603	489
6	470	640	524	290	501	430	400	500	488	179	552	543
7	548	511	534	574	436	300	296	382	349	376	562	572
8	456	626	478	571	363	294	388	309	576	516	436	448
9	449	601	626	568	330	398	377	332	458	581	444	480
10	536	316	513	576	350	314	406	382	482	476	510	488
11	259	467	586	473	420	254	276	325	482	543	479	313
12	476	529	598	507	206	188	366	372	425	566	452	554
13	404	518	494	474	384	223	434	364	528	487	388	428
14	568	558	540	397	465	270	388	448	334	298	500	350
15	458	336	407	335	436	270	440	400	294	264	488	447
16	346	518	606	377	406	230	330	466	388	362	504	407
17	410	526	582	446	384	180	380	425	354	344	700	490
18	387	466	491	422	350	240	334	335	514	629	522	530

TABLE 14c.—*Total radiation in langleys on a surface 45° South, Miami, Florida (1948)*—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	550	443	452	356	306	368	172	338	542	647	640	456
20	359	500	308	461	456	356	418	374	432	197	574	390
21	243	424	414	356	461	360	475	377	406	595	596	487
22	510	522	597	456	431	304	446	312	488	432	611	537
23	279	570	598	452	450	388	208	474	484	506	460	613
24	256	216	440	394	462	283	294	499	608	312	423	296
25	432	448	576	396	456	362	298	361	390	586	595	374
26	476	562	562	346	478	408	356	164	206	550	610	170
27	598	436	572	387	440	442	465	155	482	344	588	397
28	393	619	502	462	468	436	394	286	442	400	549	381
29	638	639	512	542	372	441	464	408	408	432	496	462
30	642		550	457	294	378	314	534	475	470	578	338
31	542		486		408		321	453		531		444
Total	14371	14461	16193	12993	12646	9959	11026	11893	13410	13565	15786	14026
Avg. per day	464	499	522	433	408	332	356	384	447	438	526	452

Total langleys for year 160329
Average per day for year 438

TABLE 14d.—*Radiation under filters in langleys on a surface 45° South, Miami, Florida (1948)*

[Figures in parentheses indicate readings for only part of day]

Day	Total	UV	Vis.	IR
January				
1	487	135	248	104
2	(305	90	152	63)
3	483	130	248	105
4	530	144	269	117
5	...	...	...	...
6	440	125	216	99
7	538	144	267	127
8	(250	61	129	60)
9	550	146	278	126
10	573	152	289	132
11	...	...	...	...
12	(178	47	90	41)
13	(73	20	39	14)
14	531	148	259	124
15	712	204	332	176
16	(120	32	63	25)
17	...	...	...	...
18	...	...	...	...
19	(474	131	239	104)
20	(95	26	51	18)
21	(95	27	49	19)
22	(470	144	224	102)
23	...	...	...	...
24	(144	38	77	29)
25	463	128	235	100
26	333	88	176	69
27	568	159	267	142
28	329	83	185	61
29	633	169	324	140
30	(530	150	267	113)
31	...	...	...	...
February				
1	681	184	333	164
2	551	156	268	127
3	(121	31	66	24)
4	(479	136	241	102)
5	...	...	...	...
6	683	200	337	146
7	594	166	301	127
8	686	201	338	147
9	613	179	304	130
10	231	56	127	48
February—*Cont'd*				
11	(277	78	143	56)
12	575	160	292	123
13	623	172	316	135
14	583	168	291	124
15	...	...	...	...
16	479	136	241	102
17	540	150	275	115
18	(187	45	85	58)
19	302	76	160	66
20	379	100	194	85
21	329	85	179	75
22	607	167	305	135
23	(487	130	247	110)
24	(96	17	56	23)
25	(122	25	71	26)
26	(507	137	259	111)
27	(446	101	240	105)
28	(469	122	246	101)
29	632	179	316	137
March				
1	(428	101	230	97)
2	651	167	338	146
3	609	147	324	138
4	652	164	340	148
5	(372	86	202	84)
6	(351	87	188	76)
7	485	117	260	108
8	(217	47	118	52)
9	604	148	320	136
10	415	99	223	93
11	538	134	285	119
12	566	143	297	126
13	376	85	204	87
14	462	105	248	109
15	521	125	276	120
16	583	145	308	130
17	630	151	336	143
18	550	133	295	122
19	478	114	256	108
20	557	131	299	127
21	551	125	298	128
22	(328	77	177	74)

TABLE 14d.—*Radiation under filters in langleys on a surface 45° South, Miami, Florida (1948)*—Continued

[Figures in parentheses indicate readings for only part of day]

Day	Total	UV	Vis.	IR
March—*Cont'd*				
23	572	108	325	139
24	(360	87	193	80)
25	606	156	312	138
26	558	133	297	128
27	(352	74	192	86)
28	(228	54	122	52)
29	...	...	...	...
30	(147	34	81	32)
31	(104	25	57	22)
April				
1	548	126	296	126
2	344	82	183	79
3	(283	66	152	65)
4	...	...	...	...
5	...	...	...	...
6	(309	70	169	70)
7	(378	85	206	87)
8	527	115	290	122
9	529	116	291	122
10	442	102	240	100
11	...	...	...	...
12	521	116	285	120
13	498	117	268	113
14	473	105	259	109
15	(245	58	135	52)
16	(178	35	103	40)
17	479	110	257	112
18	(346	83	190	73)
19	(249	54	137	58)
20	(335	74	185	76)
21	(173	37	98	38)
22	483	108	263	112
23	409	91	227	91
24	410	96	222	92
25	358	85	198	75
26	(160	39	91	30)
27	...	...	...	...
28	568	122	312	134
29	570	115	309	146
30	570	113	314	143
May				
1	501	110	274	117
2	560	119	308	133
3	572	122	315	135
4	498	108	275	115
5	552	126	308	128
6	549	118	306	125
7	433	94	243	96
8	(199	46	109	44)
9	(203	47	113	43)
10	...	...	...	...
11	449	96	251	102
12	...	...	...	...
13	483	109	265	109
14	496	107	277	112
15	476	103	247	109
16	503	106	280	117
17	390	89	218	83
18	(61	13	35	13)
19	...	...	...	...
20	(312	66	173	73)
21	443	91	247	105
22	431	96	238	97
May—*Cont'd*				
23	463	94	257	112
24	455	90	256	109
25	500	102	278	120
26	472	98	262	112
27	473	98	265	110
28	486	99	273	114
29	497	103	278	116
30	(335	71	188	76)
31	(436	92	242	102)
June				
1	(272	56	151	65)
2	(238	49	131	58)
3	424	86	235	103
4	402	81	225	96
5	466	94	259	113
6	(357	79	160	78)
7	(196	44	110	42)
8	437	76	257	104
9	483	97	271	115
10	456	94	255	107
11	467	94	264	109
12	(112	27	65	20)
13	(177	40	101	36)
14	(138	34	80	24)
15	420	97	234	89
16	(191	44	108	39)
17	(187	41	104	42)
18	492	100	278	114
19	(287	69	158	60)
20	(343	78	190	75)
21	469	98	261	110
22	446	86	236	104
23	439	92	246	101
24	425	82	243	100
25	449	92	254	103
26	448	92	254	102
27	457	90	260	107
28	355	74	202	79
29	449	88	257	104
30	481	96	273	112
July				
1	425	85	244	96
2	440	94	246	100
3	(82	14	48	20)
4	...	...	...	...
5	...	...	...	...
6	...	...	...	...
7	...	...	...	...
8	(302	72	165	65)
9	454	94	254	106
10	470	98	264	108
11	345	77	194	74
12	(304	68	170	66)
13	445	98	247	100
14	...	...	...	...
15	452	102	246	104
16	440	98	240	102
17	409	94	228	87
18	445	99	243	103
19	...	...	...	...
20	458	96	260	102
21	502	103	284	115
22	440	93	249	98
23	(141	35	83	23)

TABLE 14d.—*Radiation under filters in langleys on a surface 45° South, Miami, Florida (1948)*—Continued

[Figures in parentheses indicate readings for only part of day]

Day	Total	UV	Vis.	IR
July—*Cont'd*				
24	(164	40	92	32)
25	(134	31	74	29)
26	(290	64	159	67)
27	(282	58	158	66)
28	...	...	...	...
29	(99	22	56	21)
30	430	99	239	92
31	407	95	227	85
August				
1	195	48	112	35
2	(311	74	171	66)
3	483	107	269	107
4	525	110	295	120
5	517	107	292	118
6	499	105	281	113
7	461	102	255	104
8	502	114	276	112
9	501	111	277	113
10	(235	53	131	51)
11	(187	45	105	37)
12	498	112	274	112
13	446	101	247	98
14	373	88	207	78
15	383	92	213	78
16	441	94	248	99
17	(213	45	121	47)
18	(155	32	86	37)
19	(131	27	74	30)
20	(118	21	69	28)
21	352	82	197	73
22	(177	43	99	35)
23	500	126	271	103
24	544	119	304	121
25	(210	54	117	39)
26	(30	7	17	6)
27	...	...	...	...
28	(207	47	118	42)
29	531	129	286	116
30	(353	82	189	82)
31	(332	79	181	72)
September				
1	(240	56	131	53)
2	(109	28	59	22)
3	537	126	291	120
4	516	120	280	116
5	574	138	310	126
6	(474	138	235	101)
7	430	105	234	91
8	(504	128	269	107)
9	(187	42	103	42)
10	...	...	...	...
11	(367	89	200	78)
12	...	...	...	...
13	509	122	274	113
14	(231	56	126	49)
15	...	...	...	...
16	(379	90	208	81)
17	(172	44	94	34)
18	(294	70	162	62)
19	520	137	268	115
20	...	...	...	...
21	...	...	...	...
22	...	...	...	...
September—*Cont'd*				
23	...	...	...	...
24	(328	77	178	73)
25	(103	23	57	23)
26	...	...	...	...
27	402	105	215	82
28	582	144	312	126
29	(247	53	141	53)
30	576	144	306	126
October				
1	576	149	300	127
2	538	134	323	121
3	621	147	336	138
4	...	...	...	...
5	...	...	...	...
6	(262	66	141	55)
7	401	100	218	83
8	(481	122	254	105)
9	...	...	...	...
10	424	106	228	90
11	643	157	344	142
12	460	106	252	102
13	346	81	189	76
14	459	110	247	102
15	224	54	124	46
16	(222	52	124	46)
17	(302	73	165	64)
18	626	155	329	142
19	637	153	334	150
20	...	...	...	...
21	(503	126	264	113)
22	(306	74	162	70)
23	569	138	299	132
24	(210	53	113	44)
25	(458	115	241	102)
26	523	128	274	121
27	...	...	...	...
28	(193	60	97	36)
29	(281	76	145	60)
30	667	160	352	155
31	(53	8	32	13)
November				
1	598	140	322	136
2	567	140	296	131
3	459	116	241	102
4	656	162	345	149
5	491	121	260	110
6	561	139	298	124
7	(549	138	287	124)
8	(406	96	216	94)
9	(389	97	201	91)
10	438	103	234	101
11	539	130	286	123
12	(331	83	177	71)
13	577	143	307	127
14	604	146	324	134
15	(242	58	129	55)
16	(442	111	236	95)
17	625	150	332	143
18	(323	86	170	67)
19	592	147	315	130
20	593	148	314	131
21	537	128	292	117
22	587	142	315	130

Table 14d.—*Radiation under filters in langleys on a surface 45° South, Miami, Florida (1948)*—Continued

[Figures in parentheses indicate readings for only part of day]

Day	Total	UV	Vis.	IR
November—*Cont'd*				
23	653	170	333	150
24	(311	71	159	71)
25	614	152	324	138
26	487	117	261	109
27	(423	129	199	95)
28	521	129	279	113
29	356	89	188	79
30	574	143	298	133
December				
1	583	143	305	135
2	535	137	281	117
3	(275	67	146	62)
4	(464	119	239	106)
5	...	...	...	...
6	...	...	...	...
7	...	...	...	...
8	(173	42	91	40)
9	(82	18	44	20)
10	(277	74	143	60)
11	(22	6	12	4)
December—*Cont'd*				
12	(323	81	172	70)
13	(256	68	133	56)
14	(454	115	238	101)
15	476	120	251	105
16	614	150	321	143
17	617	150	323	144
18	553	137	289	127
19	526	131	277	118
20	499	120	263	116
21	471	118	248	105
22	492	129	255	108
23	614	154	321	139
24	313	74	165	74
25	(339	76	182	81)
26	...	...	...	...
27	(191	47	101	43)
28	(209	48	114	47)
29	539	132	287	120
30	...	...	...	...
31	635	146	322	167

Table 14e.—*Radiation in langleys on a surface 45° South through vycor glass, Miami, Florida (January 1948–July 1949)*

[January through July. 2-year means; August through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	486	488	478	397	332	219	312	153	274	438	420	488
2	403	452	455	321	363	260	318	302	348	389	434	450
3	440	142	336	182	351	292	214	356	415	460	343	289
4	391	402	448	240	206	206	143	380	337	...	488	451
5	516	434	275	265	265	300	169	384	441	...	365	492
6	392	510	373	206	368	276	288	356	435	...	441	357
7	460	396	374	416	306	196	221	353	341	306	437	443
8	366	488	338	413	264	192	295	396	425	444	378	434
9	356	473	448	406	244	280	252	366	239	384	273	336
10	457	213	406	362	258	223	292	233	250	309	334	368
11	213	360	466	347	316	174	192	229	351	479	390	48
12	377	414	469	364	156	138	255	392	290	332	303	495
13	296	394	373	352	304	164	320	344	406	237	434	425
14	471	442	408	292	369	200	286	284	221	344	522	379
15	372	253	308	245	324	212	349	282	55	160	445	373
16	258	374	462	264	314	182	244	310	363	178	348	501
17	307	410	422	326	260	134	274	285	220	161	506	486
18	293	334	365	318	245	248	250	256	336	472	299	435
19	445	340	348	264	230	286	149	187	378	483	485	390
20	270	372	238	318	335	278	299	191	156	37	473	396
21	172	328	302	234	336	267	358	269	...	454	433	378
22	390	418	450	324	326	214	333	176	...	287	493	405
23	226	410	447	319	332	276	172	392	...	427	522	500
24	224	176	300	277	331	196	173	423	435	192	273	224
25	362	329	438	302	332	256	157	201	275	428	516	306
26	398	417	406	254	332	306	257	183	40	371	374	49
27	474	300	422	272	305	318	334	147	304	48	406	355
28	314	466	391	327	317	314	280	215	428	160	387	326
29	511	511	378	386	268	308	357	419	257	223	292	440
30	470		400	457	210	292	311	439	405	493	470	178
31	419		342		296		303	305		304		523
Total	11529	11046	12066	9450	9195	7207	8157	9208	8425	9000	12284	11720
Avg. per day	372	381	389	315	297	240	263	297	312	321	409	378

Total langleys for year 119287

Average per day for year 327

TABLE 14f.—*Radiation in langleys on a surface 45° South through yellow glass, Miami, Florida (January 1948–July 1949)*

[January through July, 2-year means; August through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	317	304	278	243	204	127	188	91	169	265	266	315
2	260	300	293	196	224	147	200	186	224	241	276	287
3	281	87	214	106	208	170	134	220	262	296	222	181
4	251	253	286	148	222	120	88	243	249	...	319	285
5	331	269	179	167	158	184	104	235	282	...	240	311
6	247	324	234	122	223	166	176	221	301	...	279	225
7	299	247	286	258	184	110	135	222	205	196	286	285
8	199	306	214	257	158	116	181	243	270	288	267	275
9	226	302	286	248	145	164	166	226	150	251	215	204
10	290	128	258	219	153	136	178	134	151	189	211	226
11	127	232	296	208	190	110	116	142	212	301	274	28
12	244	270	299	218	86	81	158	242	186	210	183	310
13	206	254	238	208	186	94	196	215	250	151	274	294
14	307	281	264	172	222	116	166	172	134	216	297	227
15	234	161	190	148	199	132	202	176	27	99	280	242
16	162	238	294	164	192	108	146	189	231	115	222	315
17	224	252	260	204	154	84	166	179	136	225	320	306
18	184	202	226	190	144	163	160	156	208	313	197	266
19	251	217	215	160	138	170	91	115	255	314	293	265
20	174	233	150	189	204	174	178	116	138	25	306	255
21	103	189	187	132	203	171	216	163	...	288	279	230
22	246	264	278	196	199	148	204	107	...	172	284	250
23	142	263	281	195	188	192	105	248	...	281	324	310
24	118	112	186	166	202	130	110	256	286	119	174	139
25	222	200	271	174	204	168	94	125	167	286	326	185
26	252	271	252	154	203	178	152	115	11	233	258	27
27	296	179	274	162	184	197	207	89	198	29	261	229
28	188	302	244	197	193	190	174	135	277	100	257	205
29	322	320	231	236	162	190	223	262	163	134	177	276
30	321		246	206	122	178	196	278	270	311	302	110
31	264		216		179		190	187		179		342
Total	7288	6960	7626	5643	5633	4414	5000	5688	5412	5827	7869	7405
Avg. per day	235	240	246	188	182	147	161	183	200	208	262	239

Total langleys for year	74765
Average per day for year	205

TABLE 14g.—*Radiation in langleys on a surface 45° South through black glass, Miami, Florida (January 1948–July 1949)*

[January through July, 2-year means; August through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	96	90	82	65	56	35	50	21	46	71	78	92
2	77	85	84	54	62	42	54	52	62	72	80	80
3	81	22	60	24	58	48	34	60	75	84	61	48
4	68	71	85	40	32	34	22	67	72	..	92	80
5	98	74	50	44	42	52	26	68	81	..	68	90
6	72	96	66	32	63	47	48	63	78	..	77	67
7	89	74	65	76	50	28	34	62	58	54	82	81
8	63	88	62	75	42	32	50	68	77	83	73	78
9	65	84	84	74	38	44	46	66	39	69	59	55
10	84	34	72	61	41	36	48	37	43	51	61	62
11	37	66	87	56	53	30	32	37	60	84	75	5
12	70	77	86	58	22	18	41	68	50	59	50	82
13	59	70	69	56	52	23	54	55	68	41	76	84
14	91	80	72	45	64	28	44	48	35	60	81	62
15	74	45	50	40	56	34	56	48	4	24	76	63
16	45	66	86	42	52	26	38	52	60	26	60	92
17	61	72	74	52	42	20	42	46	32	59	91	91
18	52	58	62	51	38	43	42	44	54	88	48	78

TABLE 14g.—*Radiation in langleys on a surface 45° South through black glass, Miami, Florida (January 1948–July 1949)*—Continued

[January through July, 2-year means; August through December, 1948 only]

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	72	59	54	42	36	45	22	30	71	90	80	73
20	44	68	38	49	58	46	48	29	32	4	82	70
21	26	56	48	35	59	46	60	42	..	84	76	66
22	71	76	77	52	55	38	56	28	..	46	80	74
23	37	77	77	52	56	51	23	69	..	81	94	92
24	30	27	48	42	57	36	28	74	81	30	48	40
25	62	56	68	46	58	44	24	33	47	79	91	54
26	71	76	67	38	58	48	40	28	1	65	71	5
27	84	50	73	45	52	54	56	19	50	6	74	64
28	50	83	65	54	54	52	45	35	75	25	71	56
29	92	93	64	68	45	52	60	74	41	33	47	76
30	92		68	60	31	48	50	82	72	89	87	26
31	73		58		51		49	51		50		110
Total	2086	1973	2101	1528	1533	1180	1322	1556	1464	1607	2189	2096
Avg. per day	67	68	68	51	49	39	43	50	54	57	73	68

Total langleys for year 20635
Average per day for year 57

TABLE 15.—*Normal radiation in langleys per minute measured with spectrobolometer, Miami, Florida (December 1947–June 1948)*

Date		Time	M	H_2O	Pyrn.	Langleys			
						UV	Vis.	IR	Total
1947									
Dec.	31	11: 18	1.59	1.38	.0160	.150	.785	.485	1.420
		11: 35	1.56	1.40	.0170	.151	.791	.483	1.426
		11: 46	1.54	1.51	.0170	.150	.790	.480	1.420
		12: 00	1.53	1.56	.0170	.153	.792	.481	1.426
1948									
Jan.	1	10: 30	1.80	1.99	.0440	.125	.712	.378	1.215
	5	9: 19	2.48	0.94	.0168	.101	.707	.476	1.284
		9: 41	2.20	0.78	.0151	.114	.741	.501	1.356
		9: 59	2.01	0.77	.0143	.122	.759	.512	1.393
		10: 29	1.79	0.75	.0145	.132	.779	.525	1.436
		12: 01	1.51	0.85	.0142	.155	.810	.519	1.484
	10	10: 48	1.67	3.22	.0421	.124	.653	.395	1.172
		11: 06	1.60	3.26	.0422	.114	.671	.407	1.192
		11: 19	1.56	3.29	.0419	.118	.675	.414	1.207
	12	9: 33	2.24	3.33	.1000	.066	.510	.298	0.874
		9: 53	2.00	3.12	.0936	.078	.532	.323	0.933
	15	8: 48	2.95	0.32	....	.084	.688	.519	1.291
		9: 12	2.48	0.31	.0136	.104	.728	.542	1.374
		9: 32	2.21	0.29	.0146	.115	.739	.548	1.402
		9: 51	2.01	0.31	.0147	.126	.765	.549	1.440
		10: 19	1.79	0.31	.0154	.133	.781	.559	1.473
		10: 59	1.60	0.26	.0172	.145	.803	.572	1.520
		11: 41	1.49	0.34	.0169	.155	.805	.571	1.531
	29	8: 26	3.56	2.80	....	.056	.507	.305	0.868
		8: 39	3.10	2.36	....	.068	.551	.326	0.945
		9: 06	2.47	2.81	....	.091	.636	.348	1.075
		9: 31	2.12	2.64	.0442	.098	.642	.375	1.115
	30	10: 12	1.75	2.80	.0281	.146	.750	.406	1.302
		10: 29	1.65	2.76	.0244	.151	.773	.415	1.339
		10: 40	1.59	2.62	.0238	.153	.777	.419	1.349
		11: 07	1.50	2.67	.0238	.162	.785	.420	1.367
	31	10: 06	1.99	4.44	.0403	.114	.691	.362	1.167
Feb.	1	12: 56	1.38	1.04	....	.165	.791	.514	1.370
		15: 14	1.91	1.10	....	.128	.728	.476	1.332
		15: 44	2.24	1.04	.0183	.110	.707	.458	1.275
		16: 02	2.53	1.01	.0181	.096	.680	.445	1.221
		16: 50	4.11	0.99	.0186	.051	.557	.388	0.996
		17: 02	4.93	0.88	.0162	.036	.507	.369	0.912
1948—*Cont'd*									
Feb.	6	14: 12	1.50	3.43	.0189	.144	.784	.434	1.362
		15: 09	1.82	3.30	.0223	.127	.733	.415	1.275
		15: 29	2.00	3.08	.0221	.114	.719	.406	1.239
		15: 47	2.22	3.11	.0220	.105	.696	.397	1.198
		16: 04	2.49	3.06	.0217	.095	.678	.381	1.154
		16: 26	3.00	3.33	....	.077	.636	.363	1.076
		16: 52	4.00	3.28	....	.051	.545	.328	0.924
		17: 06	4.98	3.12	....	.036	.485	.305	0.826
	8	9: 15	2.18	2.96	.0243	.113	.711	.395	1.219
		9: 30	1.99	2.98	.0244	.121	.730	.401	1.252
		9: 53	1.79	3.07	.0245	.131	.749	.416	1.296
		10: 07	1.69	3.04	.0240	.137	.761	.419	1.317
		10: 27	1.51	3.40	.0256	.143	.767	.425	1.335
	17	9: 04	2.23	4.71	.0460	.092	.626	.339	1.057
	23	7: 48	4.63	2.59	....	.035	.429	.298	0.762
		8: 01	3.78	2.20	....	.043	.477	.337	0.857
		8: 22	2.99	2.48	....	.068	.572	.351	0.991
		8: 42	2.50	2.40	.0347	.079	.619	.372	1.070
		8: 59	2.21	2.49	.0335	.093	.650	.395	1.138
		9: 14	2.00	2.70	.0339	.102	.672	.399	1.173
		9: 35	1.79	2.72	.0325	.113	.698	.408	1.219
		10: 21	1.50	3.01	....	.124	.706	.414	1.244
	28	8: 36	2.49	3.47	.0276	.080	.607	.337	1.024
	29	7: 36	5.04	2.91	....	.031	.398	.254	0.683
		7: 48	4.07	3.17	....	.046	.473	.280	0.799
		8: 15	2.97	3.41	....	.076	.575	.322	0.973
		8: 34	2.50	3.29	.0405	.091	.626	.347	1.064
		8: 52	2.19	3.18	.0380	.104	.661	.366	1.131
		9: 05	2.00	3.34	.0401	.112	.666	.364	1.142
		9: 25	1.80	3.41	....	.118	.688	.374	1.180
		10: 09	1.50	3.70	.0372	.140	.736	.402	1.278
Mar.	8	7: 30	5.05	3.24	....	.028	.362	.222	0.612
		7: 41	4.16	3.49	....	.038	.413	.243	0.694
		8: 27	2.49	4.01	.0585	.078	.560	.302	0.940
		8: 43	2.21	4.13	.0632	.086	.580	.311	0.977
		8: 58	2.00	4.20	.0684	.090	.588	.329	1.007
	10	7: 24	5.15	3.09	....	.031	.409	.248	0.688
		7: 36	4.39	3.40	....	.047	.479	.274	0.800
		8: 24	2.50	3.62	.0378	.089	.621	.345	1.055

Table 15.—*Normal radiation in langleys per minute measured with spectrobolometer, Miami, Florida (December 1947–June 1948)*—Continued

Date		Time	M	H_2O	Pyrn.	Langleys			
						UV	Vis.	IR	Total
1948—*Cont'd*									
Mar.	10	8:40	2.21	3.46	.0386	.100	.664	.359	1.123
		8:54	2.00	3.57	.0348	.112	.689	.374	1.175
		9:13	1.79	3.68	.0359	.123	.710	.385	1.218
	24	7:15	4.88	3.22	....	.022	.301	.182	0.505
		7:26	4.05	3.79	....	.031	.361	.214	0.606
		7:49	3.00	4.25	....	.051	.458	.260	0.769
Apr.	17	6:50	4.97	3.12	....	.022	.358	.257	0.637
		7:03	4.00	3.32	....	.038	.436	.284	0.758
		7:24	3.03	3.17	....	.059	.517	.321	0.897
		7:43	2.51	3.06	.0353	.075	.569	.347	0.991
		8:00	2.19	2.74	.0370	.088	.596	.365	1.049
		8:13	2.00	2.71	.0370	.097	.626	.371	1.094
		8:59	1.80	2.92	.0348	.111	.662	.386	1.159
		9:05	1.49	3.04	.0362	.125	.699	.406	1.230
	29	6:39	4.95	2.90	....	.015	.243	.185	0.443
		6:52	3.97	3.66	....	.027	.324	.214	0.565
		7:13	3.04	3.05	....	.044	.414	.271	0.729
		7:30	2.59	2.79	....	.059	.485	.295	0.839
		7:48	2.21	2.65	.0640	.076	.553	.326	0.955
	30	6:38	4.94	1.74	....	.022	.346	.285	0.653
		6:51	3.96	1.67	....	.032	.428	.321	0.781
		7:13	3.01	1.81	....	.054	.519	.358	0.931
		7:31	2.52	1.81	.0325	.072	.570	.378	1.020
		7:48	2.20	1.89	.0325	.086	.608	.395	1.089
		8:00	2.01	1.92	.0328	.095	.633	.403	1.131
		8:15	1.80	1.78	.0322	.105	.654	.423	1.182
		8:54	1.49	1.89	.0323	.123	.694	.438	1.255
May	1	6:38	4.81	2.31	....	.020	.322	.256	0.598
		6:51	3.92	2.08	....	.030	.388	.291	0.709
		7:30	2.52	1.85	.0381	.059	.508	.342	0.909
		7:45	2.23	1.78	.0381	.069	.548	.361	0.978
	3	13:52	1.10	3.53	.0329	.154	.750	.430	1.334
		16:13	1.81	3.42	.0373	.105	.650	.369	1.124
		16:30	2.00	3.35	.0368	.096	.629	.360	1.085
		16:43	2.20	3.13	.0378	.084	.598	.350	1.032
		16:59	2.51	3.29	.0329	.074	.569	.333	0.976
		17:17	3.00	3.27	....	.056	.523	.319	0.898
		17:40	3.99	3.71	....	.031	.411	.279	0.721
	5	15:38	1.50	3.19	.0254	.132	.730	.401	1.263
		16:13	1.80	3.32	.0309	.119	.687	.383	1.189
		16:29	1.99	3.12	.0300	.106	.667	.374	1.147
		16:42	2.18	3.02	.0298	.097	.645	.364	1.106
May	5	16:59	2.50	3.13	.0254	.083	.610	.344	1.037
		17:17	2.98	3.07	....	.070	.565	.332	0.967
		17:39	3.89	3.30	....	.047	.484	.295	0.826
		17:52	4.80	2.78	....	.033	.433	.276	0.742
	13	6:46	4.04	4.19	....	.044	.480	.274	0.798
		7:09	3.03	4.60	....	.071	.561	.303	0.935
	24	7:03	3.05	3.30	....	.030	.338	.278	0.645
		7:23	2.52	3.00	.0462	.041	.404	.301	0.746
		7:40	2.20	3.06	.0520	.048	.441	.320	0.809
		7:53	2.00	3.15	.0522	.058	.477	.330	0.865
		8:10	1.79	3.32	.0530	.066	.497	.342	0.905
		8:46	1.50	3.43	.0540	.077	.539	.362	0.978
June	3	7:03	3.04	2.65	....	.030	.345	.278	0.653
		7:39	2.19	2.97	.0540	.054	.447	.319	0.820
		7:53	2.00	2.67	.0592	.063	.484	.337	0.884
		8:10	1.80	2.84	.0615	.070	.508	.349	0.927
		8:46	1.49	2.76	.0570	.088	.578	.385	1.051
	4	6:30	4.79	3.83	....	.005	.134	.169	0.308
		7:25	2.50	6.07	....	.027	.326	.280	0.633
	5	6:30	4.91	2.03	....	.004	.131	.208	0.343
		6:43	3.99	2.08	....	.010	.185	.231	0.426
		7:05	3.05	2.47	....	.015	2.58	.276	0.549
		7:40	2.22	2.56	.0520	.032	.345	.308	0.685
		7:54	2.02	2.58	.0552	.044	.394	.329	0.767
		8:12	1.81	2.69	.0610	.043	.395	.341	0.779
		8:48	1.50	2.81	.0610	.071	.506	.377	0.954
	10	6:30	4.82	3.26	....	.012	.236	.204	0.452
		6:43	3.94	3.55	....	.024	.287	.234	0.545
		7:04	3.05	3.70	....	.038	.387	.273	0.698
		7:24	2.52	4.06	.0455	.055	.458	.304	0.817
		7:40	2.22	3.78	.0454	.065	.511	.324	0.900
		7:54	2.01	3.51	.0498	.075	.533	.322	0.930
		8:12	1.80	3.87	.0520	.083	.557	.343	0.983
	11	6:29	4.94	3.34	....	.018	.321	.248	0.587
		6:42	4.01	3.96	....	.028	.370	.281	0.679
		7:04	3.06	4.12	....	.040	.427	.288	0.755
		7:24	2.52	4.57	.0423	.053	.475	.311	0.839
		7:40	2.22	4.26	.0425	.066	.520	.322	0.908
		7:54	2.00	4.08	.0450	.075	.543	.336	0.954
		8:11	1.81	4.33	.0419	.087	.581	.349	1.017
		8:48	1.50	4.48	.0398	.106	.629	.366	1.101

TABLE 16a.—*Ultraviolet radiation in langleys on a surface 45° North, using Misch metal photoelectric cell, Montezuma, Chile (1949)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	70	82	78	73	60	53	52	54	64	63	64	71
2	70	65	80	72	40	38	51	53	67	72	72	70
3	74	80	79	73	50	51	53	50	68	73	74	69
4	78	79	68	73	53	53	18	51	60	70	59	52
5	74	77	80	71	39	53	44	47	66	70	71	56
6	73	82	79	70	58	54	54	56	67	61	72	69
7	68	81	79	70	60	53	52	57	49	56	66	70
8	81	80	78	64	61	31	52	60	72	60	67	69
9	78	82	79	59	57	49	50	41	67	53	73	63
10	76	82	74	71	59	49	50	50	46	73	72	61
11	71	81	52	71	30	51	33	56	68	73	73	60
12	79	83	78	69	52	46	37	20	70	73	71	65
13	81	82	69	68	58	52	48	58	73	74	70	61
14	81	81	76	64	58	50	46	61	70	73	61	67
15	80	79	77	62	51	45	52	64	68	74	70	70
16	80	80	76	55	58	47	55	61	69	75	70	69
17	82	82	76	38	57	42	55	59	65	75	72	68
18	75	80	78	68	44	53	55	63	69	74	73	70
19	78	71	76	66	52	49	49	64	69	73	72	70
20	80	80	65	63	53	47	54	65	70	73	73	70
21	82	79	76	66	53	42	48	54	70	73	71	69
22	84	81	73	65	53	40	54	66	56	74	72	69
23	83	76	77	60	53	50	50	61	52	75	65	69
24	81	80	76	62	53	49	45	63	70	74	73	71
25	82	80	75	60	49	53	47	63	69	73	68	71
26	80	82	69	62	44	53	46	62	72	65	65	70
27	61	80	75	63	51	40	55	62	76	74	72	68
28	80	79	74	63	48	32	53	66	72	74	72	70
29	77		74	62	50	52	55	65	72	68	72	72
30	74		72	61	47	53	47	68	21	49	72	57
31	82		73		53		56	67		51		72
Total	2395	2226	2311	1944	1604	1430	1516	1787	1947	2138	2097	2078
Avg. per day	77	80	75	65	52	48	49	58	65	69	70	67

TABLE 16b.—*Total radiation in langleys on a surface 45° North, Montezuma, Chile (2-year means, 1949–1950)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	542	612	680	754	676	764	791	702	779	686	646	592
2	552	560	653	772	625	619	754	721	789	806	653	591
3	570	622	705	784	755	728	466	712	796	769	607	564
4	572	512	766	777	748	720	242	716	792	766	407	500
5	568	606	732	772	721	741	520	725	794	752	638	535
6	556	656	733	668	676	744	754	741	818	740	638	576
7	542	660	744	769	637	721	504	766	468	672	648	567
8	562	654	746	628	744	554	652	755	762	736	619	556
9	572	664	717	608	757	744	754	590	782	659	568	556
10	560	658	590	770	756	756	624	680	619	709	530	559
11	545	658	402	736	734	774	468	662	780	750	610	562
12	572	666	702	753	734	720	604	448	788	696	634	578
13	586	674	672	529	760	765	718	720	792	736	630	550
14	582	668	710	688	741	746	620	707	789	726	623	552
15	584	624	722	725	724	754	692	762	788	718	610	570
16	598	674	712	685	756	756	742	765	785	716	612	552
17	600	665	722	559	740	659	728	762	778	751	624	542
18	602	680	738	740	656	740	718	736	764	717	622	568
19	581	628	749	756	736	726	758	783	741	688	609	560

TABLE 16b.—*Total radiation in langleys on a surface 45° North, Montezuma, Chile* (*2-year means, 1949–1950*)—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
20	600	676	694	766	742	758	739	776	774	698	628	560
21	610	676	733	742	725	576	651	718	680	647	587	551
22	632	685	720	757	732	650	680	786	699	694	614	580
23	634	688	722	760	730	742	700	773	655	678	608	574
24	606	711	713	772	719	734	664	766	792	690	616	572
25	622	696	744	786	729	792	686	763	785	646	580	556
26	608	699	760	780	724	734	612	765	780	595	580	570
27	525	704	750	768	709	439	714	765	762	672	584	550
28	611	680	762	788	747	420	720	761	648	625	629	560
29	623		762	786	756	561	724	756	750	614	608	553
30	594		760	802	708	770	660	766	426	503	586	521
31	620		746		783		716	782		550		550
Total	18131	18356	22061	21980	22480	20907	20375	22630	22155	21405	18148	17327
Avg. per day	585	656	712	733	725	697	657	730	738	690	605	559

Total langleys for year 245955
Average per day for year 674

TABLE 16c.—*Radiation in langleys on a surface 45° North, through vycor glass, Montezuma, Chile* (*2-year means, 1949–1950*)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	346	415	472	556	554	600	606	525	554	435	426	366
2	366	372	468	567	484	469	604	544	561	528	432	361
3	381	423	509	580	588	566	360	531	564	496	391	361
4	376	342	476	574	586	543	184	540	561	494	268	300
5	372	428	526	570	570	570	380	542	564	481	415	304
6	378	446	535	496	522	570	580	562	584	478	413	356
7	346	446	546	569	483	587	379	584	314	428	424	344
8	376	442	538	458	587	428	497	571	537	484	398	338
9	376	452	530	444	599	543	572	422	548	420	374	328
10	360	451	425	584	596	586	474	472	434	478	331	328
11	354	448	286	550	590	599	343	477	546	478	391	340
12	373	454	522	574	578	556	456	316	546	443	404	330
13	385	462	499	396	600	594	538	538	542	470	392	346
14	384	458	511	530	592	582	468	524	537	466	404	320
15	382	430	530	561	568	590	522	568	534	454	382	349
16	395	462	520	520	598	588	562	562	534	453	384	324
17	395	455	526	414	584	508	549	536	529	472	392	323
18	398	466	544	576	528	582	545	543	556	446	392	320
19	382	427	555	583	578	566	574	575	503	425	381	316
20	400	469	506	597	584	512	561	568	517	432	389	328
21	408	468	539	566	573	446	480	524	460	428	368	324
22	424	472	530	585	570	502	512	574	472	462	376	344
23	442	478	536	585	566	582	531	563	436	450	373	338
24	406	490	527	594	564	570	492	560	528	450	380	340
25	420	482	545	610	572	591	499	556	525	423	353	326
26	409	488	554	606	574	596	448	554	520	389	354	333
27	352	492	550	600	546	331	544	552	504	448	355	320
28	416	470	558	609	587	332	544	547	432	414	388	328
29	419		558	612	592	442	540	548	494	416	366	328
30	404		557	614	531	602	500	552	295	317	352	306
31	417		547		639		543	561		358		324
Total	12042	12588	16025	16680	17683	16133	15387	16591	15231	13816	11448	10293
Avg. per day	388	450	517	556	570	538	496	535	508	446	382	332

Total langleys for year 173917
Average per day for year 476

Table 16d.—*Radiation in langleys on a surface 45° North, through yellow glass, Montezuma, Chile (2-year means, 1949–1950)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	202	245	287	340	342	372	382	328	344	266	246	207
2	232	222	275	346	346	290	382	343	348	320	249	204
3	224	250	304	364	366	352	224	335	352	299	226	201
4	218	205	272	346	360	348	106	340	350	298	156	170
5	219	250	310	374	346	358	244	342	350	294	240	183
6	224	263	316	302	324	358	380	354	362	290	238	198
7	202	262	324	349	304	366	214	367	198	258	244	194
8	221	260	318	283	360	257	334	350	335	292	229	194
9	220	264	316	274	368	360	366	264	338	252	216	188
10	213	264	252	332	368	367	299	315	268	278	194	186
11	204	263	170	338	368	372	219	300	338	288	226	189
12	220	268	312	351	358	350	287	188	338	264	233	193
13	226	272	296	243	370	407	342	332	336	284	226	186
14	225	270	301	321	366	372	298	326	333	278	233	184
15	222	258	314	341	353	374	334	356	329	273	217	195
16	232	274	308	318	371	373	358	349	328	273	226	184
17	232	269	311	246	362	322	350	333	325	285	229	181
18	236	276	322	352	326	362	346	336	322	266	228	188
19	225	252	327	355	345	360	366	358	308	252	219	182
20	234	286	300	357	380	320	355	352	316	257	225	184
21	240	284	320	354	380	280	306	320	281	253	214	181
22	252	285	314	358	357	318	322	355	286	272	214	194
23	271	291	318	358	356	370	335	349	264	258	216	190
24	242	297	318	365	352	386	308	346	320	263	220	191
25	247	296	328	375	358	390	319	340	318	254	202	184
26	242	294	336	371	341	364	285	342	314	230	202	188
27	208	298	332	372	358	204	344	342	304	263	204	180
28	247	287	337	376	366	206	342	318	260	242	223	184
29	244		340	376	370	286	338	328	296	242	210	184
30	239		340	378	370	382	316	342	178	186	202	176
31	247		335		404		342	350		208		184
Total	7110	7505	9553	10215	11095	10226	9743	10300	9339	8238	6607	5827
Avg. per day	229	268	308	340	358	341	314	332	311	266	220	188

Total langleys for year 105758
Average per day for year 290

Table 16e.—*Radiation in langleys on a surface 45° North, through black glass, Montezuma, Chile (2-year means, 1949–1950)*

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	66	79	96	118	120	134	141	118	118	94	88	76
2	70	70	90	122	104	102	139	122	126	117	90	75
3	74	81	98	126	130	124	81	119	130	112	81	72
4	71	62	92	125	126	120	34	124	130	113	48	58
5	72	79	104	126	120	126	81	126	130	110	85	62
6	74	84	107	106	110	132	132	132	134	109	84	70
7	65	86	110	120	104	134	97	130	66	92	88	70
8	72	86	108	104	125	94	112	126	116	106	84	69
9	72	86	106	92	131	130	132	92	120	90	76	66
10	69	90	82	124	132	134	102	107	96	102	68	66
11	68	88	49	119	132	138	70	102	126	107	82	66
12	73	92	102	121	128	126	100	68	124	100	86	66
13	74	91	98	78	133	137	119	119	124	106	82	66
14	74	92	99	106	130	138	102	118	116	104	82	64
15	74	90	104	112	124	141	116	129	119	100	80	68
16	79	84	102	108	132	140	126	132	118	101	81	65
17	79	91	104	82	129	114	126	122	116	106	84	64
18	79	94	110	119	116	132	124	124	112	100	84	68

TABLE 16e.—*Radiation in langleys on a surface 45° North, through black glass, Montezuma, Chile (2-year means, 1949–1950)*—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	76	82	118	122	126	128	127	131	106	95	82	64
20	80	94	100	122	128	110	128	132	112	97	83	66
21	82	94	108	124	128	96	112	120	99	94	78	64
22	86	95	106	120	132	114	116	132	100	100	80	68
23	86	96	105	127	129	133	121	128	92	95	72	68
24	82	99	105	128	131	139	108	126	116	94	80	70
25	82	90	110	135	132	149	114	125	117	89	74	65
26	81	99	115	134	130	132	102	124	116	81	74	67
27	66	102	113	132	120	68	120	122	110	94	74	64
28	82	97	114	134	135	170	120	122	112	88	81	65
29	81		118	136	138	98	132	126	106	87	78	66
30	78		116	136	134	138	110	126	61	62	74	58
31	80		114		129		120	128		70		64
Total	2347	2473	3203	3558	3918	3771	3464	3752	3368	3015	2383	2060
Avg. per day	76	88	103	119	126	126	112	121	112	97	79	66

Total langleys for year 37312
Average per day for year 102

TABLE 16f.—*Total radiation in langleys on a horizontal surface, Montezuma, Chile (May 31, 1952, through May 1, 1953)*

Date	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1		493	184	491	334	761	925	745	927	800	411	715	304
2		486	492	535	616	780	910	760	776	885	530	741	
3		470	512	537	642	774	902	769	864	619	613	710	
4		541	439	548	683	777	699	666	939	805	598	705	
5		510	494	546	627	778	920	848	926	883	405	685	
6		488	456	556	654	812	947	765	871	824	528	690	
7		430	465	540	700	818	930	843	927	803	547	712	
8		559	477	355	663	829	931	910	936	726	623	701	
9		568	488	559	701	694	933	954	929	871	485	699	
10		566	494	560	677	826	936	936	939	413	556	692	
11		446	495	551	598	883	932	977	900	654	741	687	
12		440	515	570	664	870	960	925	897	810	776	697	
13		445	516	533	485	884	933	954	899	782	783	696	
14		469	513	193	687	875	928	933	918	746	793	671	
15		488	525	583	588	886	930	928	909	776	806	682	
16		475	539	611	561	873	926	920	912	859	773	674	
17		462	518	596	606	872	933	906	919	840	794	659	
18		483	533	619	549	877	922	953	902	811	721	659	
19		475	530	609	725	876	949	912	816	851	732	683	
20		498	532	494	749	873	947	935	795	837	765	707	
21		493	451	619	744	892	912	989	765	852	703	620	
22		473	450	628	775	892	909	968	778	624	764	626	
23		443	526	631	750	918	1008	956	709	639	761	658	
24		552	466	649	747	916	951	755	761	607	773	635	
25		499	466	644	772	924	955	915	788	542	776	624	
26		484	452	649	767	902	1082	783	779	626	787	630	
27		487	325	645	768	909	810	727	792	618	757	603	
28		471	447	645	747	922	946	915	933	613	763	584	
29		385	505	664	754	884	935	920	923		743	605	
30		277	462	655	757	903	865	926	931		734	589	
31	328		472	663		913		953	932		716		
Total		14356	14739	17678	20090	25701	27766	27346	26992	20716	21257	20039	
Avg. per day		479	475	570	670	829	926	882	871	740	686	668	

Total langleys for 11 months 236680
Average per day for 11 months 709

Statistical Studies of Solar-Constant Record

Solar constant and sunspot numbers

The solar-constant record, extending from 1923 to the present, now includes two minima of sunspots, September 1933 and May 1944, and three maxima, July 1928, July 1937, and May 1947.

The year 1947 was an unusual one for sunspots. The average number recorded in 1947 was 151.6, a larger number than in any year since 1778 when the average was 154.4. The next largest average was 139.1 in 1870. Thus the period of years which includes the minimum of 1943 and the maximum of 1947 should be a propitious time to study the possibility of a correlation between sunspots and the solar constants.

Taking the 132 monthly means of the solar constant in the years 1940–50, for each one the monthly mean sunspot number was determined for the exact days upon which solar constants were recorded. These values, shown in table 17 (which includes the period 1923–50, the entire interval for which solar constants are available), were then arranged in groups of increasing sunspot numbers as shown in table 18. Figure 10 shows the relationship between solar-constant means and sunspot means.

The same process was also followed for the complete solar-

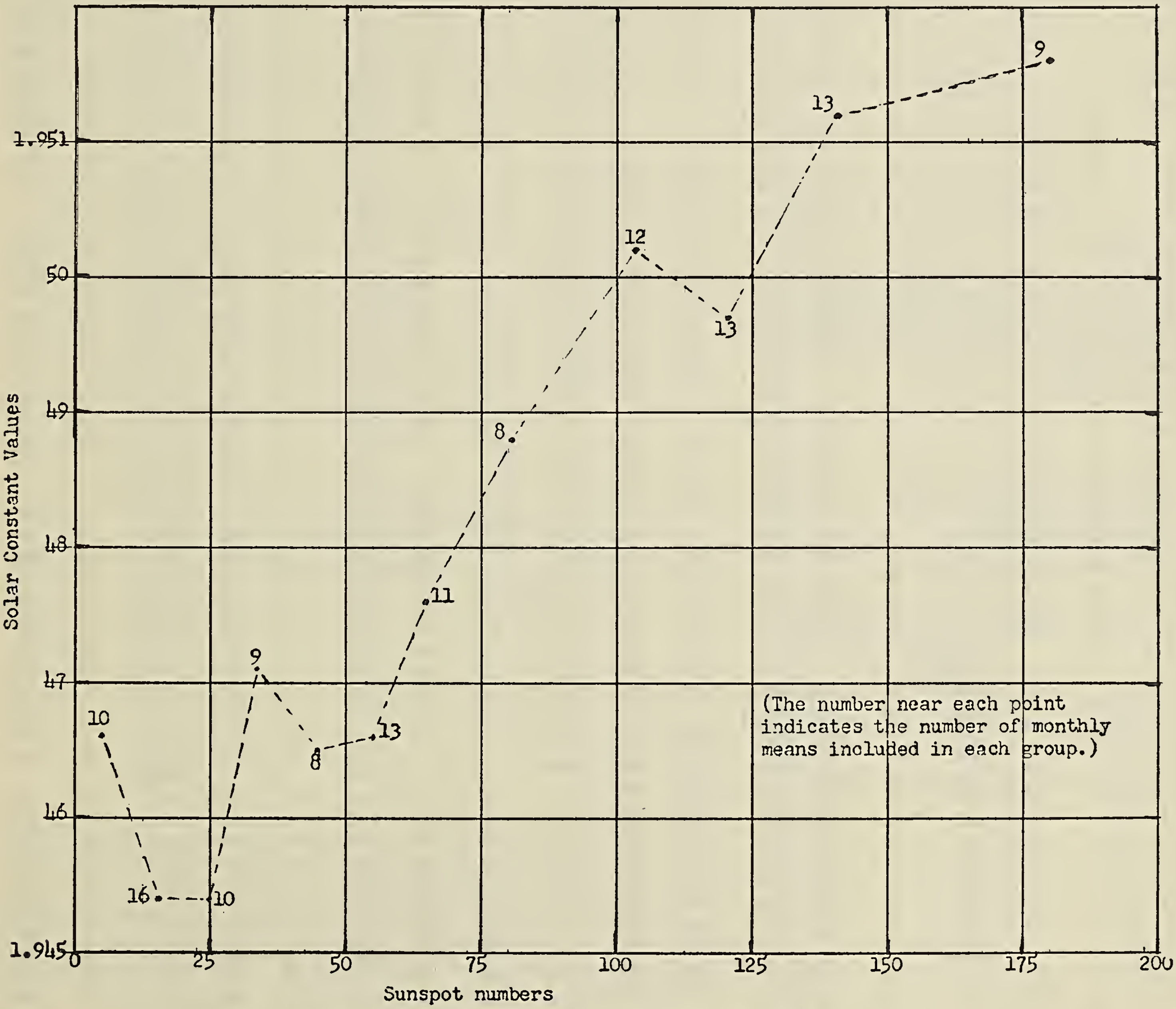


Figure 10.—Sunspots versus solar constants, 1940 through 1950.

TABLE 17.—*Monthly mean solar-constant values and monthly mean sunspot numbers for corresponding days*

[Prefix 1.9 to each solar-constant value.]

Date	S. C.	Sunspot Nos.
1923		
July	36	3.8
Aug.	41	0.5
Sept.	53	13.5
Oct.	45	12.4
Nov.	44	9.8
Dec.	43	1.4
1924		
Jan.	44	0.5
Feb.	41	9.4
Mar.	47	2.7
Apr.	42	10.9
May	50	18.3
June	52	20.4
July	51	28.6
Aug.	46	17.3
Sept.	47	25.9
Oct.	52	22.5
Nov.	53	14.6
Dec.	50	17.7
1925		
Jan.	46	2.1
Feb.	55	12.7
Mar.	50	25.0
Apr.	50	26.7
May	48	42.6
June	48	44.1
July	49	33.9
Aug.	47	38.1
Sept.	49	59.2
Oct.	48	67.3
Nov.	46	58.3
Dec.	48	91.8
1926		
Jan.	45	74.2
Feb.	38	68.4
Mar.	40	58.3
Apr.	38	39.2
May	40	60.1
June	41	70.4
July	42	57.0
Aug.	46	62.9
Sept.	43	61.2
Oct.	39	71.9
Nov.	36	50.5
Dec.	37	84.1
1927		
Jan.	39	82.5
Feb.	39	98.4
Mar.	41	86.7
Apr.	44	94.5
May	43	78.4
June	46	64.5
July	44	53.3
Aug.	43	56.3
Sept.	46	67.4
Oct.	42	64.2
Nov.	46	65.8
Dec.	44	46.4
1928		
Jan.	41	77.2
Feb.	42	74.2
Mar.	46	87.4
Apr.	44	84.0
May	48	75.1
June	49	95.3
July	43	95.0
Aug.	42	84.3
Sept.	43	88.1
Oct.	43	60.0
Nov.	46	47.3
Dec.	47	55.6
1929		
Jan.	46	69.9
Feb.	41	72.7
Mar.	41	46.2
Apr.	43	52.8
May	43	57.7
June	37	75.3
July	41	72.5
Aug.	39	63.8
Sept.	40	35.1
Oct.	41	57.6
Nov.	43	82.1
Dec.	46	113.0
1930		
Jan.	44	73.1
Feb.	44	58.1
Mar.	43	35.5
Apr.	42	38.4
May	47	35.8
June	50	28.0
July	50	23.8
Aug.	49	29.3
Sept.	46	36.8
Oct.	46	33.7
Nov.	48	32.2
Dec.	52	25.1
1931		
Jan.	48	16.5
Feb.	46	55.5
Mar.	47	29.8
Apr.	46	32.1
May	51	24.6
June	47	16.3
July	48	20.5
Aug.	47	15.1
Sept.	49	18.3
Oct.	47	10.5
Nov.	45	19.5
Dec.	46	14.0
1932		
Jan.	45	11.0
Feb.	39	13.0
Mar.	39	11.5
Apr.	41	10.4
May	39	18.9
June	42	24.0
July	44	7.9
Aug.	41	4.9
Sept.	41	1.7
Oct.	39	8.6
Nov.	39	9.7
Dec.	46	11.1
1933		
Jan.	50	16.6
Feb.	48	14.6
Mar.	42	11.6
Apr.	42	2.5
May	41	3.3
June	43	5.3
July	46	1.6
Aug.	43	0
Sept.	49	5.0
Oct.	49	3.1
Nov.	50	0.7
Dec.	50	0
1934		
Jan.	48	3.5
Feb.	45	6.6
Mar.	47	4.5
Apr.	43	12.1
May	44	18.0
June	48	6.9
July	47	9.3
Aug.	44	8.6
Sept.	48	4.0
Oct.	51	5.1
Nov.	51	9.1
Dec.	50	15.6
1935		
Jan.	48	19.1
Feb.	45	20.4
Mar.	47	20.3
Apr.	46	12.0
May	47	26.8
June	47	46.2
July	47	31.9
Aug.	49	29.1
Sept.	45	42.3
Oct.	47	54.7
Nov.	50	66.1
Dec.	51	59.1
1936		
Jan.	47	66.1
Feb.	48	72.9
Mar.	46	76.5
Apr.	46	73.5
May	47	55.9
June	49	66.8
July	47	52.3
Aug.	47	87.3
Sept.	48	76.3
Oct.	48	92.7
Nov.	52	118.3
Dec.	51	118.8
1937		
Jan.	49	134.5
Feb.	48	127.3
Mar	43	86.3
Apr.	41	112.9
May	43	129.4
June	47	130.3
July	44	153.6
Aug.	46	135.5
Sept.	48	100.7
Oct.	46	124.1
Nov.	48	73.1
Dec.	51	90.4
1938		
Jan.	47	96.3
Feb.	46	130.6
Mar.	48	102.8
Apr.	44	100.0
May	44	130.4
June	43	107.1
July	44	164.8
Aug.	45	110.8
Sept.	46	94.1
Oct.	49	98.4
Nov.	52	124.0
Dec.	51	96.1
1939		
Jan.	47	87.7
Feb.	43	79.3
Mar.	44	60.9
Apr.	43	105.3
May	42	116.1
June	41	100.8
July	42	102.7
Aug.	40	101.2
Sept.	46	110.7
Oct.	44	91.4
Nov.	48	69.6
Dec.	47	41.9
1940		
Jan.	47	47.3
Feb.	45	60.7
Mar.	43	80.5
Apr.	48	59.6
May	48	52.6
June	48	82.4
July	49	69.6
Aug.	47	106.5
Sept.	49	67.7
Oct.	46	55.7
Nov.	45	60.4
Dec.	49	61.7
1941		
Jan.	48	41.5
Feb.	48	52.0
Mar.	50	45.6
Apr.	47	30.0
May	51	26.0
June	48	60.7
July	52	66.2
Aug.	50	59.4
Sept.	48	66.0
Oct.	50	46.8
Nov.	49	38.0
Dec.	51	37.7
1942		
Jan.	49	36.4
Feb.	48	51.9
Mar.	43	56.3
Apr.	45	65.4
May	47	25.6
June	48	12.3
July	48	20.7
Aug.	45	19.7
Sept.	44	18.0
Oct.	44	18.2
Nov.	48	30.7
Dec.	44	23.3
1943		
Jan.	42	11.7
Feb.	44	29.2
Mar.	43	28.4
Apr.	45	26.1
May	46	15.0
June	51	7.9
July	48	12.7
Aug.	49	18.3
Sept.	47	8.6
Oct.	46	7.5
Nov.	43	9.1
Dec.	48	16.3
1944		
Jan.	48	1.3
Feb.	52	1.0
Mar.	44	12.6
Apr.	44	0
May	46	2.5
June	44	5.0
July	45	5.0
Aug.	43	15.2
Sept.	40	12.7
Oct.	43	18.7
Nov.	46	10.8
Dec.	46	22.4
1945		
Jan.	39	18.2
Feb.	46	13.3
Mar.	43	22.7
Apr.	48	32.0
May	47	30.5
June	44	34.9
July	48	50.1
Aug.	41	31.3
Sept.	42	41.6
Oct.	42	67.8
Nov.	47	46.5
Dec.	43	23.5
1946		
Jan.	46	40.9
Feb.	39	53.9
Mar.	38	59.0
Apr.	46	75.7
May	53	80.3
June	52	55.4
July	50	114.5
Aug.	48	106.0
Sept.	50	90.0
Oct.	48	100.4
Nov.	53	114.7
Dec.	54	131.1
1947		
Jan.	53	115.6
Feb.	49	136.9
Mar.	45	122.6
Apr.	49	126.3
May	50	208.1
June	51	177.1
July	47	148.3
Aug.	49	173.6
Sept.	47	181.3
Oct.	52	165.1
Nov.	53	124.5
Dec.	54	130.0
1948		
Jan.	51	107.1
Feb.	53	77.5
Mar.	49	88.6
Apr.	51	187.6
May	52	170.6
June	56	170.6
July	57	139.0
Aug.	53	149.3
Sept.	56	109.0
Oct.	52	139.8
Nov.	56	91.9
Dec.	55	134.2
1949		
Jan.	55	121.7
Feb.	56	191.4
Mar.	47	151.1
Apr.	49	148.7
May	51	107.5
June	44	129.7
July	49	123.6
Aug.	49	120.3
Sept.	47	144.6
Oct.	50	133.0
Nov.	52	144.0
Dec.	54	118.1
1950		
Jan.	56	101.7
Feb.	49	107.8
Mar.	47	112.3
Apr.	45	118.3
May	49	104.0
June	49	84.8
July	47	95.4
Aug.	50	86.5
Sept.	47	53.4
Oct.	52	60.3
Nov.	51	57.5
Dec.	49	48.0
1951		
Jan.	50	55.9
Feb.	52	58.9
Mar.	55	59.9
Apr.	43	89.8
May	40	111.7
June	44	96.9
July	46	63.7
Aug.	48	63.6
Sept.	47	78.2
Oct.	47	53.5
Nov.	42	52.9
Dec.	46	45.6
1952		
Jan.	45	42.3
Feb.	41	21.6
Mar.	36	14.1
Apr.	44	27.6
May	46	22.6
June	47	36.8
July	40	42.3
Aug.	43	55.1
Sept.	42	29.7
Oct.	43	21.7
Nov.	40	25.5
Dec.	47	37.6

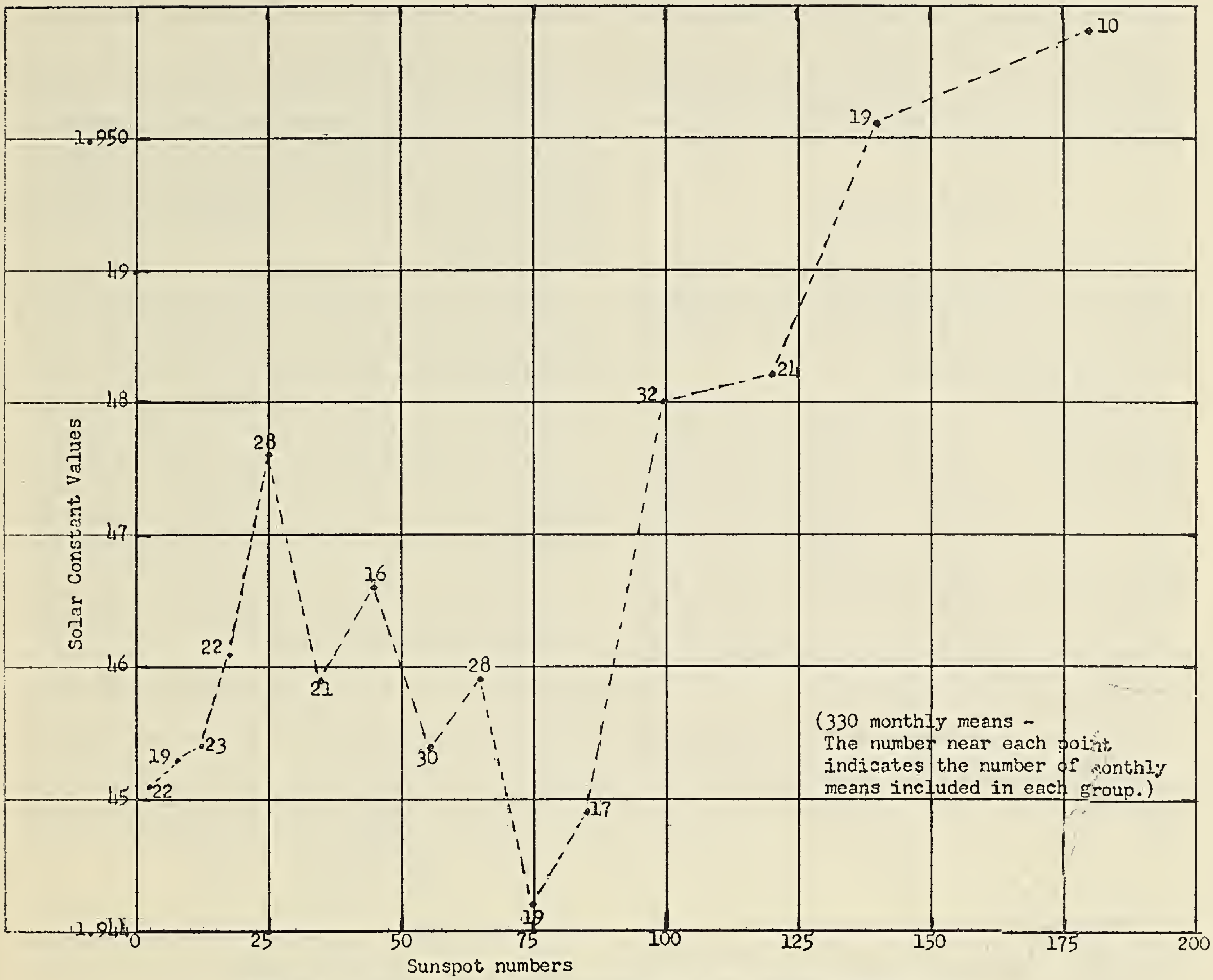


Figure 11.—Sunspots versus solar constants, July 1923 through December 1950.

constant record (July 1923 through December 1950, a period of 330 months) shown in table 18 and plotted in figure 11.

The plot for 1940–50 indicates a fairly regular increase in solar constants with increasing sunspot numbers.

The plot for 1923–50, based upon many more means than the first plot, shows in general a trend to higher solar constants with larger sunspot numbers. However there is a definite reversal of trend between sunspot Nos. 25 and 75. This reversal is little if at all indicated in the first plot.

Since this second curve is built up from more than twice as many monthly means it should have greater weight. It is conceivable, however, that the cumulative effect of small and obscure changes of scale may have crept into the solar-constant period of 28 years which are not so noticeable in the 11-year period 1940–50. At least we can feel certain there is reality in the trend to higher solar constants with larger sunspot numbers.

At the suggestion of Dr. S. B. Nicholson, of Mount Wilson Observatory, we have taken from table 17, for the period

Table 18.—*Grouping of monthly means of solar constants and sunspot numbers*

[Prefix 1.9 to all solar constants.]

1940–1950 (132 months)				[July 1923–December 1950 (330 months)]			
No. monthly means	Sunspot range	Solar constant means	Mean sunspot number	No. monthly means	Sunspot range	Solar constant means	Mean sunspot number
10	0—10	466	4.9	22	0—5	451	2.1
16	10—20	454	15.2	19	5—10	453	7.6
10	20—30	454	24.8	23	10—15	454	12.3
9	30—40	471	33.5	22	15—20	461	17.5
8	40—50	465	44.8	28	20—30	476	24.9
13	50—60	466	55.1	21	30—40	459	34.4
11	60—70	476	64.2	16	40—50	466	44.7
8	70—90	488	82.0	30	50—60	454	55.6
12	90—110	502	103.4	28	60—70	459	64.7
13	110—130	497	120.2	19	70—80	442	74.7
13	130—160	512	140.8	17	80—90	449	84.9
9	160+	516	180.7	32	90—110	480	99.1
				24	110—130	482	119.5
				19	130—160	501	139.2
				10	160—208	508	179.0

1940 through 1952, the 12-month running means of solar constants and of sunspot numbers. These are plotted against time in figure 12. Though the solar-constant values vary less than 6/10 of 1 percent, the general agreement between the two plots in figure 12 indicates a direct relationship between solar constants and sunspot numbers.

Annual variation

From the table of monthly means of the preferred solar constants 1926–50 we have taken the means by months, and the same has been done for the monthly means of Montezuma and Table Mountain (table 19a). Plots of these values are given across the top of figure 13.

It is noted that the plot of Table Mountain reflects the poor skies at that station, particularly during February, March, and April.[14] During these months the skies at Table Mountain are nearly always very hazy and of poor quality. This condition is apparent to a smaller extent even in curve 1, the preferred means. Montezuma on the whole shows, as expected, very little variation in the means by months. Both stations show a slight gradual increase during the year from January to December but, since the two stations are 6,000 miles apart and one in the northern and the other in the southern hemisphere, it would not seem probable that terrestrial atmospheric effects would cause the same change at both stations.

We next have taken the monthly means of the common days during each 5-year interval. In the 5-year interval 1926–30 there are 458 common days, omitting poor days. The years 1931–33 are omitted because of the unusual volcanic eruptions in southern Chile which polluted Montezuma skies during 1932 and 1933.[15] In the 1934–38 interval there are 405 common days; 1940–44, 438 days; 1946–50, 335 days (see table 19b).

Plots of these 5-year intervals are given in figure 13.

Across the bottom of figure 13 are the means for 1926 to 1951. They are very similar to the preferred mean values of the top part of the figure, as would be expected.

It is interesting to examine the 5-year interval curves of the common days. The trend in the 1926–30 period is a gradual rise similar to that of the 1926–50 curve. The successive 5-year curves, however, show marked changes in trend—upward for 1934–38 and downward for 1940–44 and 1946–50. But in each 5-year interval the trend is similar at both Montezuma and Table Mountain. This strengthens the conclusion that both stations indicate the same trend in solar-constant change, and that except for the low values at Table Mountain in February to May there is little annual variation due to terrestrial causes.

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[14] Ann. Astrophys. Obs., vol. 6, p. 41, 1942.

[15] Ann. Astrophys. Obs., vol. 6, p. 41, 1942; Smithsonian Misc. Coll., vol. 104, No. 6, 1944.

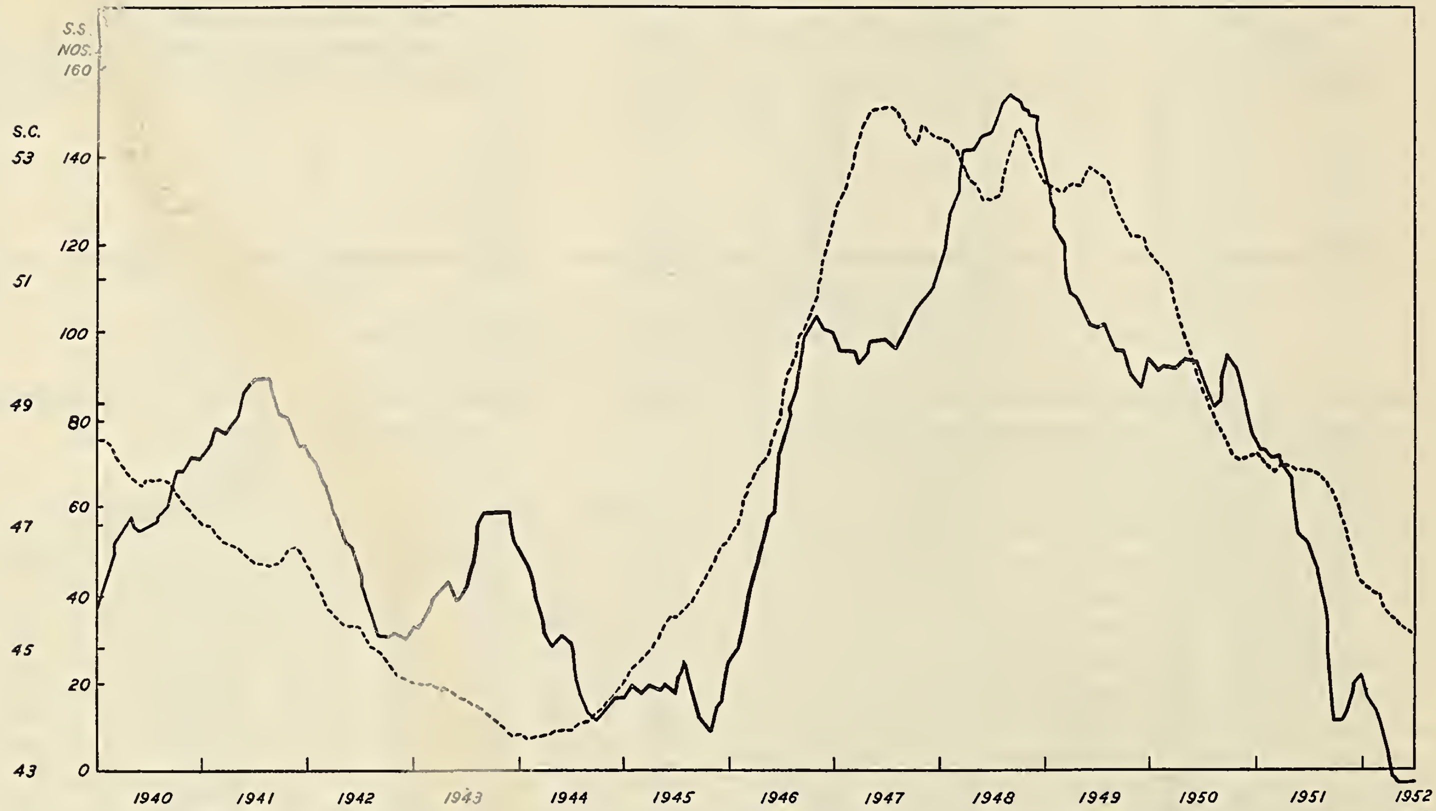

FIGURE 12.—Sunspots versus solar constants, 12-month running means, 1940 through 1952. Continuous line, solar constants; broken line, sunspot numbers.

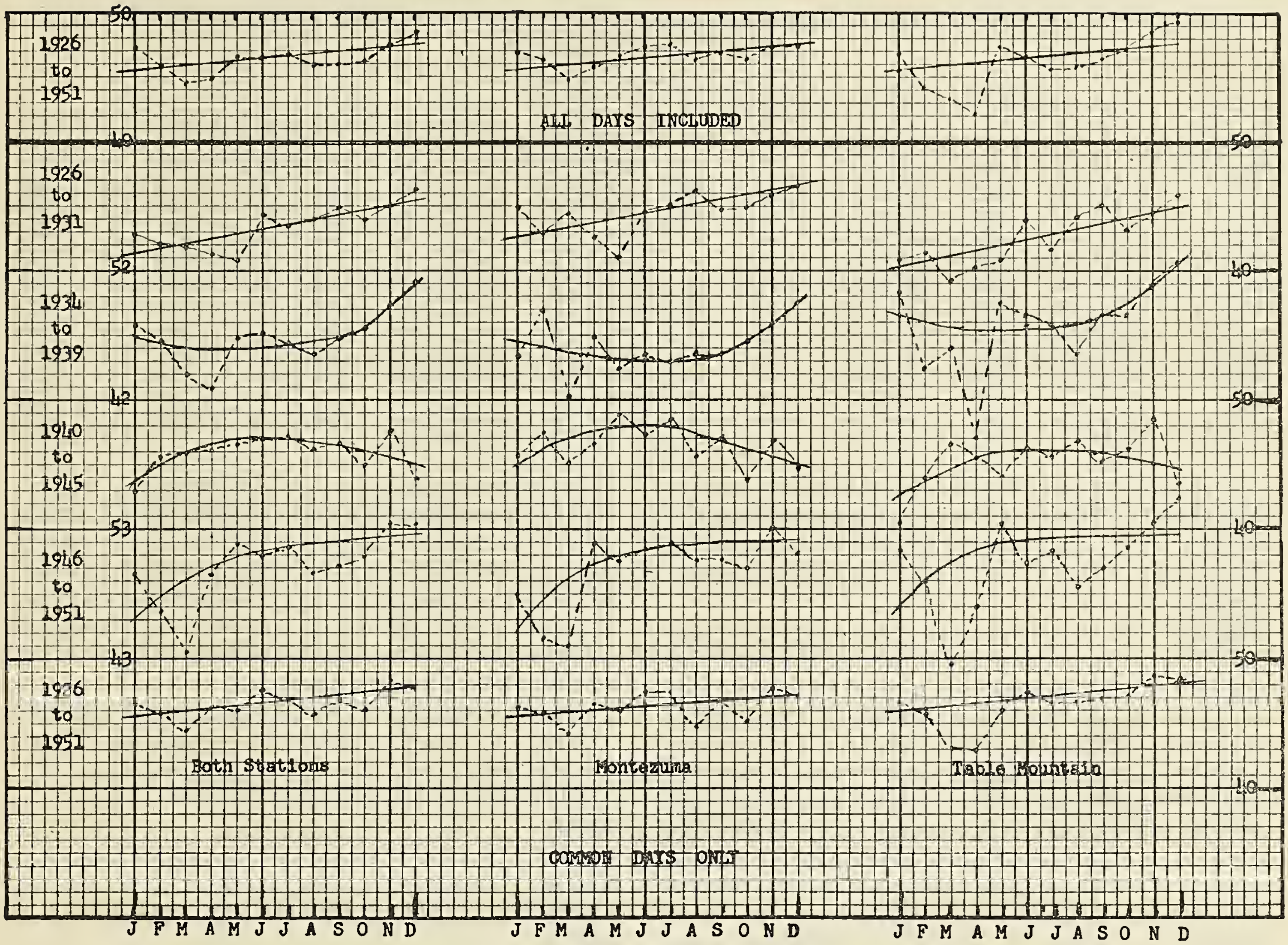

Figure 13.—Annual variation of monthly means of solar constants, 1926 through 1950.

Relationship of Pyranometry, Pyrheliometry, and precipitable water

These three quantities are simultaneously measured during each bolograph. The pyranometer measures the brightness of the sky around the sun, the pyrheliometer measures the total energy in the direct solar beam, and the precipitable water (or centimeters of water that would be produced if all the water vapor in the atmosphere vertically above the station were condensed into liquid) is determined by Fowle's spectroscopic method (see chapter 2) from the bolograph record.

Obviously these quantities are closely related. When the pyranometer reading increases, the pyrheliometer reading decreases, and vice versa. Also, when the precipitable water increases, the pyrheliometer decreases, and vice versa. It is of interest to study these relationships as a means for discovering possible changes in scale in either the pyranometer or the pyrheliometer.

Two lists were first prepared, one for Montezuma and the other for Table Mountain, giving for all available days the date and the air mass 2.0 value of the precipitable water, the pyranometer and the pyrheliometer. The Table Mountain

Table 19a.—*Monthly means of solar constants, preferred values, 1926–1950.*

[Prefix 1.9 to all values]

Month	Preferred value	Montezuma	Table Mountain
Jan.	469	469	468
Feb.	456	463	441
Mar.	442	447	433
Apr.	448	457	421
May	466	466	473
June	466	472	465
July	468	475	456
Aug.	458	462	458
Sept.	464	464	464
Oct.	463	462	472
Nov.	478	472	485
Dec.	486	473	492

TABLE 19b.—*Monthly means of solar constants on common days for four 5-year periods at Montezuma, Chile, and Table Mountain, California*

[Prefix 1.9 to all solar constants]

	1926–30				1934–38				1940–44				1946–50			
Month	No. values	Both sta.	M.	T.M.	No. values	Both sta.	M.	T.M.	No. values	Both sta.	M.	T.M.	No. values	Both sta.	M.	T.M.
Jan.	21	427	448	407	15	478	454	503	14	429	456	403	32	495	475	515
Feb.	23	420	429	412	11	466	490	442	22	455	474	437	15	462	436	489
Mar.	35	417	444	390	15	440	421	459	31	457	450	464	21	429	433	425
Apr.	31	413	426	401	12	428	468	388	18	460	466	454	19	479	490	469
May	26	408	409	408	28	467	442	492	37	464	489	440	15	506	489	533
June	30	443	446	440	57	471	456	486	49	467	471	463	34	503	504	502
July	48	433	450	416	41	463	447	479	54	471	486	456	40	507	502	512
Aug.	28	451	461	441	45	454	455	454	45	461	456	467	43	480	474	486
Sept.	55	447	445	450	46	469	455	484	55	466	480	452	33	490	483	498
Oct.	59	439	449	430	60	474	464	484	46	449	436	462	40	498	481	515
Nov.	57	450	458	443	50	493	477	509	41	476	469	484	32	519	503	535
Dec.	45	462	466	459	25	512	496	528	26	439	445	432	6	490	437	543

list includes the years 1934–50, the Montezuma list, the years 1940–51. The values were arranged by years, in groups having a narrow range of precipitable water, and of pyranometry. Means of each group for each year are summarized in table 20.

The pyrheliometer value for each year in each group was adjusted in the last column of the table to the mean precipitable water and pyranometer value of the group. The amount of this correction was determined from a study of the average effect upon the pyrheliometry of small changes in precipitable water and in pyranometer value. This study indicates that, both for Table Mountain and Montezuma, a change of .0001 ly/min. in pyranometer value changes the pyrheliometer value in the opposite direction by .005 ly/min. A change of 1 unit in precipitable water shows a different effect on pyrheliometry at the two stations. At Table Mountain an increase of .01 cm. in precipitable water decreases the pyrheliometer value .0024 ly/min. and vice versa. At Montezuma, however, the change in pyrheliometry varies with the value of the precipitable water, thus:

At precipitable water .05 cm. the change in pyrheliometry is .0053 ly/min. for .01 cm. precipitable-water change. At precipitable water .7 cm. the pyrheliometer change is only .0009 ly/min.

These corrections to reduce each annual pyrheliometer mean to the chosen pyranometer value and precipitable water value for the group have been applied in the last column of each group. Since in all cases the change in pyrheliometer value is small, these rough corrections introduce little error.

On examining all the various groups in table 20 we note that in the eight Table Mountain groups there is no marked change in pyrheliometry that persists through a majority of the groups for successive years. The Montezuma groups, on the other hand, do show a significant change in pyrheliometer means, beginning with 1949 and continuing through 1952. In nearly all of the 20 groups the pyrheliometer value falls some $\frac{1}{3}$ of 1 percent beginning in 1949. Since in all cases the pyrheliometer value is the mean of many values, solar variability is largely eliminated.

To summarize from the 20 Montezuma groups (table 20):

In 1949, 18 out of 20 groups show pyrheliometry lower than the 1940–48 mean; average decrease, .0065 ly.

In 1950, 20 out of 20 groups show an average decrease of .0069 ly.

In 1951, 15 out of 17 groups show an average decrease of .0080 ly.

In 1952, 9 out of 9 groups show an average decrease of .0065 ly.

Evidently some change occurred at about the beginning of 1949. Did the pyrheliometer scale change? No similar change is evident in repeated comparisons of the modified Ångström pyrheliometer vs. silver-disk pyrheliometers S.I. 29 and S.I. 47 in the entire period 1945–50, nor is there any evidence of change in the silver-disk constants from comparisons against substandard S.I. 5 brought from Washington.

We must then assume that the pyranometer is at fault, due possibly to a change in the type of sky prevailing since 1949 which the pyranometer does not properly record. The temporary remedy is proportionately to increase the 1949–52 Montezuma values. This is further discussed in chapter 2 (p. 21). We have currently under test a filter form of pyranometer which, it is believed, will help to correct this difficulty. This filter pyranometer is discussed in chapter 5.

Table 20a.—*Relationship of precipitable water, pyranometer, and pyrheliometer at air mass 2.0, for Montezuma, Chile*

[Prefix the figure 1. to all pyrheliometer values]

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
					H_2O=5
		03–05			Pyran.=66
1940	2	04	66	594	589
1941	2	05	63	591	590
1942	3	05	66	588	588
1943	3	03	63	600	588
1944	2	05	64	581	580
1945	8	05	66	588	588
1946	7	04	62	589	582
1947	2	04.5	64	585	581
1948	2	05	62	591	589
1949	2	04	68	592	588
1950	11	05	65	576	576
1951	2	04	75	592	591
					H_2O=10
		08–12			Pyran.=64
1940	16	10	64	567	567
1941	9	12	62	564	571
1942	7	11	64	561	564
1943	10	8	62	576	565
1944	11	10	64	564	563
1945	8	10	64	567	566
1946	6	9.5	61	569	564
1947	14	10	63	564	563
1948	9	10	63	567	566
1949	7	9	63	555	549
1950	6	9.7	65	566	564
					H_2O=10
		08–12			Pyran.=71
1940	5	11	77	559	566
1941	3	10	79	561	565
1942	11	11	71	561	565
1943	5	10	72	564	564
1944	13	11.6	71	556	563
1945	12	10	69	563	562
1946	7	11	70	555	559
1947	11	11	68	560	563
1948	4	10	67	565	563
1949	5	10	71	556	556
1950	10	9.6	70.5	558	556
1951	3	12	70	545	553
					H_2O=10
		09–13			Pyran.=81
1942	4	12	84	550	560
1943	7	10	80	559	559
1944	5	13	93	543	562
1945	3	11	87	551	558
1946	1	12	78	546	558
1947	2	9	76	562	555
1948	3	11	88	550	558
1949	3	13	79	541	553
1950	3	13	81	541	554
1951	2	10	82	550	550
					H_2O=17
		16–18			Pyran.=66
1940	6	18	66	542	545
1941	14	17	66	548	548
1942	17	18	66	543	546
1943	19	18	69	543	547
1944	17	17	66	543	543
1945	12	17	65	547	547
1946	13	17	63	545	544
1947	19	17	67	548	548
1948	15	18	68	542	546
					H_2O=17
		16–18			Pyran.=66
1949	7	17	69	536	537
1950	12	16	70	541	540
1951	4	16	76	527	529
					H_2O=17
		16–18			Pyran.=75
1940	13	18	75	536	539
1941	2	18	72	538	539
1942	7	17	71	544	542
1943	4	16	84	541	543
1944	12	16	75	540	537
1945	8	17	73	542	541
1946	12	17	76	537	537
1947	7	18	83	533	540
1948	7	18	78	538	542
1949	5	17	79	533	535
1950	14	17	82	526	529
1951	4	16	76	527	525
					H_2O=17
		16–18			Pyran.=82
1940	5	17	78	534	532
1941	3	17	94	534	540
1942	12	17	82	536	536
1943	4	16	84	541	539
1944	4	16	85	538	537
1945	7	18	83	531	534
1946	2	17	83.5	532	533
1947	7	18	83	533	536
1948	7	18	78	538	539
1949	5	17	79	533	532
1950	14	17	82	526	526
1951	10	17	86	526	528
					H_2O=17
		17–19			Pyran.=100
1941	3	17	94	534	531
1942	7	18	100	530	533
1943	4	18	92	534	533
1944	5	19	96	523	527
1945	9	18	101	527	530
1946	4	17	103	524	525
1947					
1948	7	17	98	529	528
1949	5	19	90	527	528
1950	5	17	97	523	522
1951	6	17	106	516	519
					H_2O=22
		21–23			Pyran.=66
1940	6	21.5	65	538	537
1941	8	21	62	543	539
1942	7	21	66	536	534
1943	5	22.6	67.6	533	535
1944	8	21	66	533	531
1945	6	22	66.5	534	533
1946	7	22	64	536	535
1947	8	22	67	531	531
1948	9	22	67	533	533
1949	5	21	65	530	527
1950	3	23	68	529	532
					H_2O=22
		20–24			Pyran.=74
1940	8	22	71	531	530
1941	4	20.5	71	539	534
1942	9	21.4	73	530	528

TABLE 20a.—*Relationship of precipitable water, pyranometer, and pyrheliometer at air mass 2.0, for Montezuma, Chile*—Continued

[Prefix the figure 1. to all pyrheliometer values]

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
		20–24			H_2O=22 Pyran.=74
1943	7	20.4	74	532	528
1944	6	22	74	526	526
1945	5	21	74	534	532
1946	6	22	71	529	528
1947	6	22	72	527	526
1948	6	22.5	74	529	530
1949	5	23	75	521	524
1950	5	22	74	522	522
1951	3	24.3	75.3	514	520
		20–25			H_2O=22 Pyran.=81
1940	5	23	79	524	524
1941	6	23	83	524	527
1942	3	20.3	81	536	532
1943	3	24.7	80	523	529
1944	3	21.7	82	521	521
1945	3	22	82	523	523
1946	6	23	81	522	524
1947	5	21	83	523	522
1948	6	22	81	526	526
1949	2	22	83	518	519
1950	5	20	82	518	514
1951	6	22	80	519	519
		21–24			H_2O=22 Pyran.=98
1940	5	22	103	513	515
1941	1	22	99	522	522
1942	6	22	96	521	520
1943	4	21	93	524	519
1944	6	22.5	92	518	516
1945	6	22	98	519	519
1946	3	24	101	510	516
1947	7	22	97	519	519
1948	4	23	88	522	519
1949	2	21	95	517	513
1950	5	21	98	511	509
1951	4	21.5	101	505	505
		28–31			H_2O=29 Pyran.=66
1940	11	29	67	521	521
1941	10	29	65	527	527
1942	6	30	65	521	522
1943	7	29	67	522	522
1944	9	29	67	519	519
1945	6	29	66	520	520
1946	12	29	66	521	521
1947	6	28	65	522	520
1948	4	31	67	522	526
1949	4	29	67	512	512
1950	4	28	74	514	516
1951	1	26	75	517	516
		28–30			H_2O=29 Pyran.=75
1940	8	29	75	515	515
1941	..	..	..	...	...
1942	9	29	76	515	515
1943	12	29	80	513	515
1944	7	28	75	515	513
1945	9	29	76	516	516
1946	8	29	77	518	517
1947	11	29	77	511	510
1948	5	29	77	515	514
1949	5	30	77	513	516
1950	4	28	74	514	512
1951	1	26	75	517	512
		26–31			H_2O=29 Pyran.=88
1940	9	29	86	510	509
1941	5	30	87	510	512
1942	8	29	88	510	510
1943	12	29	80	513	509
1944	10	29	89	508	508
1945	4	30	85	508	508
1946	..	..	..	...	...
1947	..	..	..	...	...
1948	..	..	..	...	...
1949	6	31	89	500	504
1950	3	26	88	512	507
1951	3	30	91	496	499
		27–30			H_2O=29 Pyran.=101
1940					
1941	4	30	101	502	504
1942	7	29	101	506	506
1943	3	29	110	500	504
1944	3	29	105	500	502
1945	6	29	103	503	504
1946	2	28	98	504	501
1947	6	28	94	507	502
1948	5	28	105	506	506
1949	4	30	127	487	502
1950	3	28	106	496	497
1951	2	27	122	487	494
		54–59			H_2O=58 Pyran.=74
1940	3	58	74	484	484
1941	1	56	86	468	476
1942	7	57	73	479	478
1943	1	59	73	478	479
1944	1	58	67	484	481
1945	2	59	96	464	476
1946	4	56	72	480	477
1947	1	55	84	473	475
1948	2	58	72	480	479
1949	2	55	90	459	464
1950	1	54	93	465	470
1951	2	59	84	459	465
		55–60			H_2O=58 Pyran.=169
1940	1	59	183	429	437
1941	1	58	169	435	435
1942	1	55	185	435	440
1943					
1944	1	59	160	438	435
1945	2	58	189	419	429
1946	1	55	173	443	442
1947	1	56	176	441	442
1948	..	..	...	...	...
1949	..	..	...	...	...
1950	4	57	168	429	428
1951	1	60	150	440	433

Table 20a.—*Relationship of precipitable water, pyranometer, and pyrheliometer at air mass 2.0, for Montezuma, Chile*—Continued

[Prefix the figure 1. to all pyrheliometer values]

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
					$H_2O=90$
		81–94			Pyran.=120
1940	1	81	104	445	430
1941	5	89	128	434	437
1942	3	85	120	437	433
1943	3	85	113	442	434
1944	4	87	103	438	427
1945	5	84	138	425	429
1946	4	88	122	424	423
1947	2	84	149	424	433
1948	4	92	114	428	427
1949	5	90	125	416	418
1950	1	86	150	411	424
1951	1	94	103	446	441

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
					$H_2O=90$
		86–99			Pyran.=160
1940	1	99	206	391	422
1941	3	89	162	418	418
1942	1	86	223	390	418
1943	7	92	165	410	414
1944	3	92	158	407	408
1945	3	92	191	399	416
1946	2	88	197	396	413
1947	2	92	178	400	411
1948	1	93	138	419	411
1949	1	99	164	395	405
1950	4	86	170	404	405
1951	4	90	185	405	417

Table 20b.—*Relationship of precipitable water, pyranometer, and pyrheliometer at air mass 2.0, for Table Mountain, California*

[Prefix the figure 1. to all pyrheliometer values]

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
					$H_2O=12$
		06–14			Pyran.=85
1934	6	10	101	530	528
1935	12	11	84	535	531
1936	5	11	93	527	526
1937	10	12	80	532	530
1938	11	11	80	531	525
1939	8	10	95	534	529
1940	14	13	88	526	531
1941	10	10	85	536	528
1942	3	12	92	527	529
1943	11	12.2	89	523	525
1944	16	12	76	531	528
1945	6	12	63	534	526
1946	11	11	82	536	531
1947	9	11	85	536	532
1948	17	10	85	536	528
1949	4	12	82	530	529
1950	6	11	74	537	529
					$H_2O=19$
		15–23			Pyran.=100
1934	17	19.6	106.6	506	510
1935	15	19.3	89.6	513	509
1936	19	20.2	98.2	507	509
1937	13	18.0	88.5	513	505
1938	15	19.3	81.1	509	501
1939	19	19.4	103.2	499	502
1940	17	19.5	110.5	499	505
1941	12	19.2	96.3	502	501
1942	16	18.1	118.	498	505
1943	14	19.6	73.1	510	498
1944	26	19.2	93.4	506	504
1945	8	19.4	100.2	500	501
1946	19	18.6	111.4	500	505
1947	34	19.4	93.0	505	502
1948	24	18.3	93.1	508	502
1949	17	18.8	87.6	512	505
1950	10	20.0	94.5	506	506
					$H_2O=27$
		24–30			Pyran.=100
1934	12	28.0	110	486	493
1935	14	27.4	86.5	500	494
1936	10	26.3	91.8	500	495
					$H_2O=27$
		24–30			Pyran.=100
1937	8	26.5	89.8	497	491
1938	12	26.7	93.4	492	488
1939	11	27.1	93.2	497	494
1940	18	28.1	91.1	485	484
1941	16	27.6	117	476	485
1942	16	26.6	112	485	490
1943	12	27.2	88.3	489	483
1944	21	27.1	97.5	486	485
1945	6	27.2	78.2	499	488
1946	21	26.9	105	485	487
1947	13	26.5	91.0	495	489
1948	15	26.8	107.1	488	492
1949	12	27.2	96.7	491	489
1950	12	27.1	99.1	491	491
					$H_2O=33$
		31–37			Pyran.=90
1934	13	33.3	114	475	486
1935	20	33.6	94.2	485	488
1936	12	33.3	132	470	488
1937	18	33.8	104	476	483
1938	8	32.9	90.8	478	478
1939	19	32.9	92.3	488	489
1940	9	32.9	94.2	483	485
1941	12	33.9	92.8	483	486
1942	20	33.4	103.8	472	479
1943	19	33.1	88.4	479	478
1944	15	34.1	90.4	478	480
1945	10	35.0	84.3	477	479
1946	17	33.8	103.4	474	481
1947	18	33.9	98.4	477	482
1948	12	34.9	111.3	472	484
1949	12	34.2	76.9	492	487
1950	11	33.7	102.7	478	485
					$H_2O=41$
		38–45			Pyran.=100
1934	11	41.9	112.4	466	474
1935	20	40.9	109.8	467	472
1936	15	42.3	98.6	471	473
1937	9	42.0	81.2	475	468
1938	11	40.8	118.4	475	466
1939	14	41.4	115.6	461	470

TABLE 20b.—*Relationship of precipitable water, pyranometer, and pyrheliometer at air mass 2.0, for Table Mountain, California*—Continued

[Prefix the figure 1. to all pyrheliometer values]

Year	No. values	H_2O (cm. × 100)	Pyran. (ly/min. × 10000)	Pyrh. (ly/min.)	Pyrh. corrected
					H_2O=41
		38–45			Pyran.=100
1940	16	41.2	101.7	463	464
1941	18	40.9	104.9	466	468
1942	13	40.1	103.4	466	466
1943	16	41.8	92.9	463	462
1944	14	40.2	108.7	460	462
1945	13	42.4	101.2	457	461
1946	12	41.8	93.3	467	466
1947	16	40.4	121.7	455	465
1948	16	40.8	100.1	467	467
1949	8	40.8	107.8	464	468
1950	12	42.4	121.9	454	468
					H_2O=50
		46–54			Pyran.=100
1934	16	51.1	122.1	451	464
1935	15	49.4	105.9	456	458
1936	4	49.0	102.2	462	461
1937	11	50.6	85.9	461	457
1938	12	50.3	110.4	443	449
1939	5	48.4	158.4	432	458
1940	12	50.5	105.7	448	452
1941	9	48.7	89.8	465	457
1942	8	49.6	107.5	452	454
1943	10	48.3	96.3	457	452
1944	8	48.6	78.1	467	453
1945	7	50.6	74.0	464	452
1946	15	48.5	96.7	457	452
1947	11	50.0	131.0	434	449
1948	4	52.2	108.8	450	459
1949	6	51.0	99.0	456	458
1950	12	50.3	111.2	450	457
					H_2O=60
		55–65			Pyran.=100
1934	9	60.1	124.7	436	448
1935	11	59.1	133.2	431	446
1936	9	59.6	126.2	441	453
1937	7	58.9	87.9	454	448
1938	7	59.9	117.4	432	441
1939	4	59.5	105.5	444	447
1940	14	58.9	130.5	425	438
1941	7	58.7	100.1	445	442
1942	15	59.6	92.2	450	445
1943	7	59.7	130.3	414	428
1944	5	60.0	112.2	432	438
1945	5	58.6	73.8	457	441
1946	11	60.2	100.9	446	446
1947	20	60.2	100.5	445	445
1948	5	60.6	91.6	456	453
1949	7	60.3	86.4	454	448
1950	12	59.5	114.7	440	446
					H_2O=70
		66–80			Pyran.=100
1934	10	71.0	128.7	426	442
1935	9	70.6	114.4	431	439
1936	2	74.5	98.0	434	444
1937	10	72.9	104.1	434	442
1938	11	72.4	100.8	432	437
1939	7	69.0	126.4	433	444
1940	8	71.5	95.8	438	443
1941	10	72.8	104.2	434	441
1942	14	69.8	82.6	445	436
1943	15	72.3	93.3	438	440
1944	3	69.7	105.0	431	432
1945	5	72.4	101.4	427	433
1946	11	73.2	95.4	435	440
1947	11	71.5	113.6	428	438
1948	6	74.5	90.3	444	450
1949	2	69.0	140.0	412	430
1950	1	70.0	82.0	451	442

CHAPTER 8

Ozone

Dr. G. M. B. Dobson of Oxford, England, some years ago developed an excellent spectroscopic method for determining the quantity of ozone in the atmosphere by using the strongly absorbing "Hartley" band in the ultraviolet region. He established a chain of cooperating observatories in Europe and showed that the quantity of ozone varies with the time of year, with the latitude, and with certain weather elements. In 1927 Dr. Dobson and the Smithsonian Institution cooperated to install at Montezuma a Dobson spectroscope for ozone measurements. The spectral photographs were reduced at Dr. Dobson's laboratory in England. Contrary to European experience, the results showed nearly zero variation and a smaller total quantity of ozone than European stations. The apparatus was then transferred to Table Mountain where both Mr. Fowle's studies and the Dobson apparatus indicated a large variation—at least five times as great as at Montezuma. As at other stations the variation is seasonal—a maximum of ozone in the spring of the year, a minimum in the autumn.

As Dr. Abbot has pointed out (Ann. Astrophys. Obs., vol. 5, p. 125, 1932), the error due to variable ozone absorption is negligible in the long-method solar-constant results since the depression of the pyrheliometer reading largely compensates for the absorption in the bolograph. The short-method value, however, is directly affected by the variable ozone, and the error may amount to nearly 1 percent in the solar-constant value.

To correct for the error introduced in the short method by the large variation of ozone at Table Mountain, Dr. Abbot devised an empirical method,[16] using the weak absorption in the visible Chappuis bands ($.48\mu$ to $.63\mu$ wavelength). This has been used to correct all short-method solar constants at Table Mountain for the variable effect of ozone absorption.

In 1931, at the request of Dr. Abbot, Dr. Oliver R. Wulf [17] made a preliminary study of the measurement of the ozone absorption in the Chappuis bands from bolographic data at Table Mountain. A mean of 8 days gave a value of the ozone content in fair agreement with Dobson's photographic method for the same days.

By good fortune, Dr. Wulf in visiting Table Mountain several years ago renewed his interest in the possibility of obtaining satisfactory ozone measures from Table Mountain bolographs. As a result he prepared the preliminary statements given in the appendix. Appendix 1A describes his method for determining the variation in the vertical path ozone, using the data from a single bolograph at air mass 2.5; and Appendix 1B describes his method for measuring the ozone content from transmission coefficients determined from long-method bolographs. One of our Table Mountain staff has been assigned to carry out the necessary computing under Dr. Wulf's direction. Preliminary reductions look very promising. It is expected that in time, from our regular daily bolographs, excellent determinations of the amount and variation of ozone above Table Mountain will become routine.

A condensed summary of the computations for a sample day follows:

At any wavelength the attenuation of vertical sunlight by molecular scattering, haze, and the absorption by ozone may be represented by an expression of the form

$$\log \mathrm{T} = a\mathrm{X} + \beta(\mu^2 - 1)^2\lambda^{-4} + \zeta$$

where a is the absorption coefficient of ozone at the corresponding wavelength λ, X the ozone value expressed as centimeters of the gas at standard temperature and pressure, T the transmission coefficient at wavelength λ, and μ the index of refraction of air at the same wavelength under standard conditions. β and ζ are constants on a given day.

For June 18, 1952, we have

Place	λ	T	log 1/T	$(\mu^2 - 1)^2\lambda^{-4}$	a
19	.722	.957	.01908	.26309	.0082
20	.686	.947	.02366	.32422	.0174
22	.614	.907	.04238	.51096	.0588
24	.570	.886	.05258	.69131	.0620
26	.532	.883	.05404	.92022	.0384
28	.499	.871	.05998	1.19838	.0158
30	.470	.852	.06956	1.53710	.0057

Log 1/T at place 24 is corrected for water vapor by the equation

$$\log 1/\mathrm{T}\ (\text{corrected}) = \log 1/\mathrm{T} - \eta \cdot \mathrm{H_2O}$$

where η is the effective absorption coefficient of water vapor at place 24. The present tentative value of η is .00487. The value of H_2O, the precipitable water, for June 18 is .198 cm. Therefore, log 1/T corrected is

$$.05258 - .00487 \times .198 = .05162$$

We may now write the following equations:

$$\begin{aligned}
.01908 &= .0082\mathrm{X} + .26309\beta + \zeta \\
.02366 &= .0174\mathrm{X} + .32422\beta + \zeta \\
.04238 &= .0588\mathrm{X} + .51096\beta + \zeta \\
.05162 &= .0620\mathrm{X} + .69131\beta + \zeta \\
.05404 &= .0384\mathrm{X} + .92022\beta + \zeta \\
.05998 &= .0158\mathrm{X} + 1.19838\beta + \zeta \\
.06956 &= .0057\mathrm{X} + 1.53710\beta + \zeta
\end{aligned}$$

The seven equations in three unknowns may be condensed to three equations in three unknowns:

$$\begin{aligned}
.00969 &= .00942\mathrm{X} + .14373\beta + .20630\zeta \\
.29856 &= .14373\mathrm{X} + 5.55892\beta + 5.44528\zeta \\
.32032 &= .20630\mathrm{X} + 5.44528\beta + 7.00000\zeta
\end{aligned}$$

Solving the three equations

$$\mathrm{X} = .280,\ \beta = .04108,\ \text{and}\ \zeta = .00552.$$

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[16] See Ann. Astrophys. Obs., vol. 5, pp. 124–131, 1932.

[17] Smithsonian Misc. Coll., vol. 85, No. 9, 1931.

Summary of Volume 7

The solar-constant record.—Thirteen years of solar-constant determinations are added to the 17 years previously reported in table 24 of volume 6 of the Annals of the Astrophysical Observatory. This 30-year record forms as nearly as possible a homogeneous series based upon the scale of the original Mount Wilson work. Fortuitously, this scale, as is explained in the following paragraphs, is only 0.7 percent above what we believe to be the true scale of radiation.

Pyrheliometry.—One hundred independent comparisons between Abbot's standard waterflow pyrheliometer and the silver-disk substandard S.I. 5 made by Mr. Hoover and Mr. Froiland at Table Mountain in 1952 confirm the previous Mount Wilson comparisons of 1932, 1934, and 1947. These comparisons fix the true standard scale of radiation at 2.5 percent below the Smithsonian Scale of 1913.

The results of a campaign during the past 6 years to redetermine the constants of the pyrheliometers in use at the field stations by repeated comparisons between those instruments and our substandards indicate that the scale of pyrheliometry used in the solar-constant record is 1.8 percent below the Smithsonian Scale of 1913. Since the true standard scale is 2.5 percent below the 1913 standard scale, the solar constants as given are all 2.5 percent − 1.8 percent, or 0.7 percent, too large. The mean solar constant of the 30-year record, expressed in true langleys per minute, is 1.932 instead of 1.946 ly/min.

Seven writers have suggested that our ultraviolet and infrared corrections need revision (see p. 18). Five of them recommend increasing the total UV and IR correction by an average of 2.5 percent. If this were done, the 1.932 value just given as based upon true calories would be increased .4 percent (see p. 19) to 1.940. As we see it, this value 1.940 ly/min. is the most probable absolute value of the mean solar constant.

New instruments.—Chapter 5 discusses four new devices, a filter pyranometer, an integrator for a 4-point Brown recording potentiometer, an instrument to record sky steadiness, and a new photometer loaned to us by Harvard College Observatory.

Total sun and sky radiation.—Summaries of global radiation and its relative energy in ultraviolet, visible, and infrared bands are presented in chapter 6. The measurements were made at Camp Lee, Va., Miami, Fla., and Montezuma, Chile.

Ozone measurements at Table Mountain.—Interesting measures of the ozone content of the atmosphere, determined from regular solar-constant bolographs at Table Mountain, are in progress. These measures are under the guidance of Dr. Wulf of the U. S. Weather Bureau. Dr. Wulf's preliminary description of the method is given in Appendix 1. The method, when finally established, will permit us to go back over the plates of the past 25 years and to determine the ozone above Table Mountain on each day of observations.

Sunspots and solar constants.—In chapter 7 the relationship between sunspot numbers and solar constants is summarized for the period 1926–51. In general, higher solar constants accompany larger sunspot numbers.

Appendix

1. MEASUREMENT OF OZONE

A. Preliminary description of a method for the measurement of day-to-day variations of vertical path ozone using the absorption in the Chappuis bands and the data afforded by a single standard Smithsonian bologram

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The procedure makes use of solar radiation intensities at wavelengths in the region of the ozone absorption and at wavelengths on either side of this. The principal problem is the deriving, from the intensities at wavelengths outside the ozone region, the intensities at wavelengths within this region as they would be if the ozone absorption were absent but all other conditions unchanged. This is done by determining, from the data of many days, intensity relations between the wavelengths employed, assuming a mean value for the ozone over the station. This scale is later subject to calibration by direct ozone determinations from transmission coefficients afforded by long-method days. The following description will differentiate between those parts of the procedure that are basic and those that are accessory in nature.

Basically, seven points in the spectrum are at present employed. Four of these are at different wavelengths in the ozone absorption, each giving a separate measure of the ozone. The other three points, one to long wavelengths of the ozone absorption region, and two to shorter wavelengths, are in regions where the ozone absorption is zero or small.

The dispersion of the bologram (Table Mountain) has been measured with considerable care, using the Fraunhofer lines. The adopted wavelengths for the seven points are given in the following table, though these values may be subject to some later improvement. The ozone absorption coefficients are also given in the table. They are taken from the measurements of E. Vigroux (Compt. Rend. Acad. Sci. Paris, vol. 227, pp. 272–274, 1948). For the point at 4650 Å, where the absorption is small but not negligible, a standard small correction to the observed intensity is made using a mean ozone value of 0.212 cm. This point is then regarded as outside the ozone absorption.

Values tentatively adopted for wavelength and absorption coefficient at the seven points

Point	Wavelength	Absorption coefficient
28,28′	8550 Å	zero
22,23	6705	0.0238
18	6100	0.0629
16	5775	0.0624
13	5400	0.0396
6a,6b	4650	0.0047
1,1a	4265	zero

The naming of the points is purely historical and can be revised whenever desired. These names designate carefully chosen, identifiable points, such as maxima or minima in the trace, where measurements can be made. An important factor influencing the choice is freedom from water-vapor absorption.

The solar radiation has come through the ozone and then through the lower atmosphere which acts as a screen, reducing the intensities at all wavelengths in the spectrum but the shorter wavelengths more strongly than the longer. This screen varies from day to day not simply in its total scattering power but also to some degree in the wavelength dependence of the scattering. A measure of this latter in relation to the former is a part of the ozone measurements and becomes an important byproduct of these.

It is essentially assumed, as a first approximation, that the values which the intensities in the ozone absorption would have relative to those outside the ozone absorption if the ozone absorption were absent but all the remaining stopping power of the atmosphere present, are derivable from the relative intensities in the solar radiation itself and from the change of atmospheric scattering with respect to wavelength. An empirical method is used in which the ratio of the intensities at 4650 Å and 8550 Å, called the blue/red ratio, gives a quantity indicative of the principal change with wavelength, and the ratio of I(4650 Å)–I(4265 Å) to I(8550 Å)–I(4650 Å), spoken of as the curvature, gives a quantity indicative of the rate at which the change of scattering with wavelength is itself changing with wavelength. These two quantities are used to classify the days with respect to the scattering. Other such quantities could of course be devised.

If at a point in the region of ozone absorption the ozone absorption were absent, but all other stopping power present, then the intensity which would be observed at that point could be obtained by multiplying the intensity at a point outside the ozone region by a factor. This factor (a different one for each ozone point) is the average value, as the daily observations accumulate, of the ratio of the intensity at the point in the region of ozone absorption (computed as if the ozone absorption were absent, using an average ozone value of 0.212 cm.) to the intensity at the appropriate point outside the ozone absorption. The seasonal as well as the day-to-day variation of ozone is of course involved here.

This procedure may be illustrated as follows. Assume that the sky remains constant over many days on which such measurements are made, and that during these days the ozone fluctuates in a representative manner. For any one point in the ozone region as many values of the factor for this point accumulate as there are days. The average value of the factor will approximate the true value of the ratio of the intensity at this point (computed as if the ozone absorption were absent) to the intensity of the appropriate point outside the ozone absorption.

Actually, however, the sky varies, and the true value of this factor will be different for different blue/red ratios. The computed values of the factor (actually their logarithms) are plotted therefore against the blue/red ratio. When a sufficient number of points (number of days) are available they should portray a swath on such a diagram. The line best representing this relation is then taken as giving the factor for any particular blue/red ratio.

However, in addition to the variation in blue/red ratio, the sky also exhibits in some measure a variation in the rate of change of intensity with wavelength. This will be indicated by the variation, for any one blue/red ratio, of the quantity defined above and called the curvature. At present there appears to be a rather marked tendency toward a constant proportionality between these two quantities. Tentatively therefore the chart for each of the four points may not need to be more than the simple graph of the logarithm of the factor against the blue/red ratio. On the other hand it may prove necessary to take into account also the variation in the quantity called the curvature among days of the same blue/red ratio, or vice versa.

At present the factors for the points at 6705 Å and 6100 Å are based on the point at 8550 Å, while those for the points at 5775 Å and 5400 Å are based on the point at 4650 Å.

The weakness of the absorption of atmospheric ozone in the Chappuis bands is the principal factor with which this work has to contend. Accuracy in the observed intensities at the seven points is therefore of prime importance.

Accessory to the above and with the purpose of increasing the accuracy of the intensity read at a single point, readings at one or two nearby points are also made. Either by simple averaging or by means of ratios of the intensities established over many days, a single reading for the point desired is obtained. At present this is not done systematically. The points at 8550 Å, 6705 Å, 4650 Å, and 4265 Å are each the average of two readings close in wavelength to one another. The points at 6100 Å and 5775 Å are obtained from readings at three places each, using ratios of their relative intensities to reduce these to a single value at the middle point. The point at 5400 Å is similarly obtained from readings at two adjacent places.

For one of the points contributing to the value at 6100 Å and which lies practically at the maximum of the ozone absorption, water vapor absorption is not negligible, and a correction for water is made in this reading before combining it with the other two to give the value at 6100 Å. To make this correction, a reading is also made at a point lying in moderately strong water vapor absorption. This is at slightly shorter wavelengths of the point at 8550 Å.

In all, this constitutes 17 points. When for any one day the deflections have been read at these points and entered in a standard form of calculation, the values of the factors at the four points in the ozone absorption are first computed assuming the ozone over the station to be 0.212 cm. Such calculation gives this day's contribution to the four charts. Then taking the values of the factors given by the charts, the ozone value for each of the four points is computed and the average of these four taken as the ozone value for the day.

The effective path through the ozone at air mass 2.5 in terms of the vertical path differs slightly from 2.5 because of the distribution of ozone in altitude. In this work this is taken as 2.45. The calculation of the intensity factors and of the ozone values involves, in one or another form, simply the relation $\log I_0 - \log I = \text{absorption coefficient} \times$ effective path in terms of the vertical path ozone.

B. The measurement of atmospheric ozone using atmospheric transmission coefficients in the visible spectrum: A preliminary description of the method

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(September 3, 1952)

The atmospheric transmission coefficients, determined from long-method solar-constant observations in especially clear skies, offer an unusual opportunity to measure the amount of ozone in the atmosphere above the station. The relatively weak absorption of ozone is used, the maximum of which occurs in the orange-yellow region of the spectrum. This measurement of ozone on days of clearest skies will, moreover, constitute a calibration for the other procedure, already devised, which permits a measurement of ozone, from a single regular bologram, on an assumed scale that is known to be not far from the true one. A preliminary description of this relative measurement of ozone has already been submitted. The present determination from transmission coefficients in the visible should, furthermore, afford a valuable comparison with the common determination of ozone which employs the ultraviolet absorption.

For the days on which the long method is used in the solar work the skies are so clear that, at the altitude of the station, the attenuation of sunlight in passing down through the atmosphere can be rather closely approximated, in the absence of selective absorption, by two terms, one the molecular or Rayleigh scattering which is inversely proportional to the fourth power of the wavelength, and the other a term independent of wavelength representing the "white" scattering or "ground glass" effect of relatively large particles. In such case the optical density of the atmosphere may be written

$$\text{Optical density} = -\log T = \beta(\mu^2-1)^2\lambda^{-4}+\zeta$$

where T is the transmission coefficient at wavelength λ, μ the index of refraction of air at this wavelength under standard conditions, and β and ζ are constants. With certain qualifications β is a constant from which Avogardro's number may be calculated, and ζ is a constant for any one day's set of measurements (if the haze remains essentially unchanged during the observations), but it changes from day to day as the amount of haze above the station changes. The quantity ζ should prove to be a very good measure of average haze density during the day's observations, derived, as it is here, from six bolograms. In using such an expression attention is called to the work of Tien Kiu (Publ. Obs. Lyon, vol. 2, fasc. 8, pp. 241–251, 1938), who has employed it in studying early data from the Montezuma station.

Of the numerous places in the spectrum where transmission coefficients are measured, several lie in the region of the ozone absorption mentioned above. Three of them, places 22, 24, and 26, lie near the maximum of the ozone absorption at wavelengths 0.614μ, 0.570μ, and 0.532μ, where the absorption coefficient of ozone has the values 0.0588, 0.0620, and 0.0384 respectively (by interpolation from the work of E. Vigroux, Compt. Rend. Acad. Sci. Paris, vol. 227, p. 272, 1948). These three places in the spectrum have been chosen as lying in the strong ozone absorption. Two other places have been chosen on each side of these where the ozone absorption is small; namely, places 19 and 20 at wavelengths 0.722μ and 0.686μ with ozone absorption coefficients of 0.0082 and 0.0174, and places 28 and 30 at wavelengths 0.499μ and 0.470μ with ozone absorption coefficients of 0.0158 and 0.0057 respectively.

Over the spectral range covered by these places the only selective absorptions that need be considered are those of ozone and water vapor. The transmission coefficients at places 19 and 20 near the region of moderately strong water bands are determined[1] from the envelope of the bologram trace in this region. It seems that the weak and very broad ozone absorption that decreases gradually out to roughly 0.8μ before becoming quite negligible is contained in these transmission coefficients. Because of the weak water band in the region 0.578–0.567μ, the question of water vapor absorption arises at place 24, where, though very weak and smaller than the ozone absorption, it is an appreciable part of the total and requires a small correction which can be made in a fairly simple manner. Attention is called by Tien Kiu (at the end of his article referred to above) to water absorption at 0.499 (place 28). Whether the absorption here is sufficient to warrant a correction in this work is being studied at present.

The need for giving consideration here to very weak water absorption arises, of course, from the fact that the absorption by ozone in the visible spectrum, even at the maximum, is weak, a factor with which this work always has to contend. After the very small correction to the transmission coefficient at place 24 for water vapor absorption, the seven transmission coefficients at these seven wavelengths are taken as measures of the attenuation of vertical sunlight by molecular scattering, haze, and the absorption by ozone. Each of the seven may be represented by an expression of the form

$$-\log T = \alpha X + \beta(\mu^2-1)^2\lambda^{-4}+\zeta$$

where α is the absorption coefficient of ozone at the corresponding wavelength (taken from the work of Vigroux referred to above), and X is the ozone value expressed as centimeters of the gas at standard temperature and pressure. The other quantities are described above. Values of μ over these wavelengths are contained in the work of Tien Kiu referred to above.

Thus seven equations in three unknowns, X, β, and ζ are available, seven places being used simply to have adequate data. These seven equations are condensed to three equations by multiplying through each equation separately by the coefficients of each of the three unknowns separately, and summing for each unknown, obtaining then three equations in the three unknowns. These equations are then solved for the ozone value X, the coefficient β of the scattering by air molecules, and the haze density ζ.

Several long-method days have been treated in this manner. The relatively small variability of β, the relatively large variability of ζ from day to day as the amount of haze changes, and the variation from day to day of the value for the ozone over the station have all been observed.

An approximate measure of the very weak water absorption at place 24 can be made by calculating separately the values of X for places 22, 24, and 26, using β and ζ values obtained from the seven equations. The absorption at place 24 due to water vapor is measured by the change in the value of X at place 24 as compared with the average value of X at the two other places. So far as is known, places 22 and 26 are free from any water absorption.

Several features in the above description require amplification, and there are questions that remain to be answered concerning the adequacy of the spread of the seven places in the spectrum and concerning the variability of β. These will be part of the subject of a continuation of this report to be submitted after the procedure described here has been applied to a larger number of days. This will also give opportunity to revise portions of this preliminary description where necessary.

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[1] See Ann. Astrophys. Obs., vol. 5, p. 96ff., 1932.

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